



SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

No. OC276  
REVISED EDITION-A

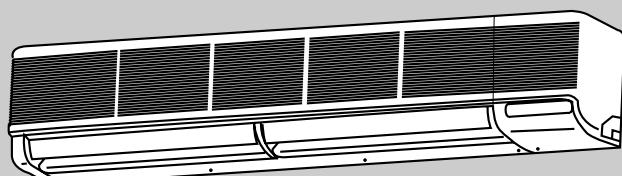
# TECHNICAL & SERVICE MANUAL

## Series PKH Wall Mounted

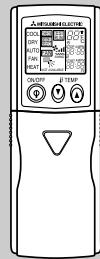
[Models] **PKH18FL**  
**PKH24FL**  
**PKH30FL**  
**PKH36FL**

### Revision:

- The wrong descriptions in REFRIGERANT SYSTEM DIAGRAM have been modified.  
(Page 18.)
- The wrong descriptions in WIRING DIAGRAM have been modified.  
(Page 19.)
- Restrictor valve and capillary tube have been added to "Specifications" of heat exchanger.  
(Page 48.)
- Please void OC276.



Indoor unit

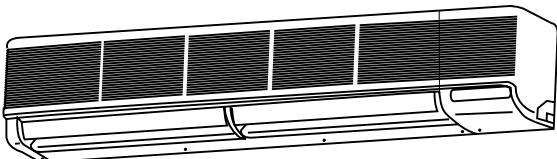


Remote controller

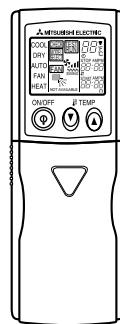
### CONTENTS

1. FEATURES .....	2
2. PART NAMES AND FUNCTIONS .....	3
3. SPECIFICATIONS.....	4
4. DATA .....	5
5. OUTLINES AND DIMENSIONS.....	16
6. REFRIGERANT SYSTEM DIAGRAM .....	18
7. WIRING DIAGRAM.....	19
8. OPERATION FLOW-CHART .....	20
9. MICROPROCESSOR CONTROL.....	24
10. TROUBLESHOOTING .....	41
11. DISASSEMBLY PROCEDURE .....	45
12. PARTS LIST.....	48


**Mir.SLIM™**



Indoor unit



Remote controller

Models	Cooling capacity / Heating capacity	SEER
PKH18FL	18,000 / 18,600 [25,100] Btu/h	11.1
PKH24FL	24,000 / 25,000 [31,500] Btu/h	10.2
PKH30FL	30,000 / 33,000 [40,500] Btu/h	10.6
PKH36FL	34,200 / 38,000 [45,500] Btu/h	10.5

## 1. COMPACT DESIGN

The PKH series models have been downsized and now require such minimal wall space that they can even be installed above windows.

## 2. LCD WIRELESS REMOTE CONTROLLER

The new wireless remote controller has a larger easy-to-read temperature display, and executes ON/OFF commands and temperature settings with a press of the button.

## 3. AUTO FLAP SHUTTER

With a simple flick of the OFF switch the air outlet can be closed off with a shutter. The shutter also functions as a flap during operation to adjust the air flow angle, with "Auto Angle 1" securing a comfortable air flow.

## 4. INSTALLATION : FAST AND EASILY ADAPTABLE

### (1) Multi-directional piping

Multi directional drain and refrigerant piping radically improves flexibility in selecting installation layouts. PKH18/24/30/36FL models boast refrigerant piping in 4 directions and drain piping in 2 directions.

### (2) Back plate installation guide

The back plate installation guide gives clear instructions on installation positions. The enlarged back plate secures the unit firmly to the wall, while the support piece which lifts the unit makes left side piping work much easier.

### (3) Easily removable filter and convenient wireless remote controller

The presence of thumb screws on the filters means that the filters can be quickly and smoothly removed.

## 5. HIGH RELIABILITY AND EASY SERVICING

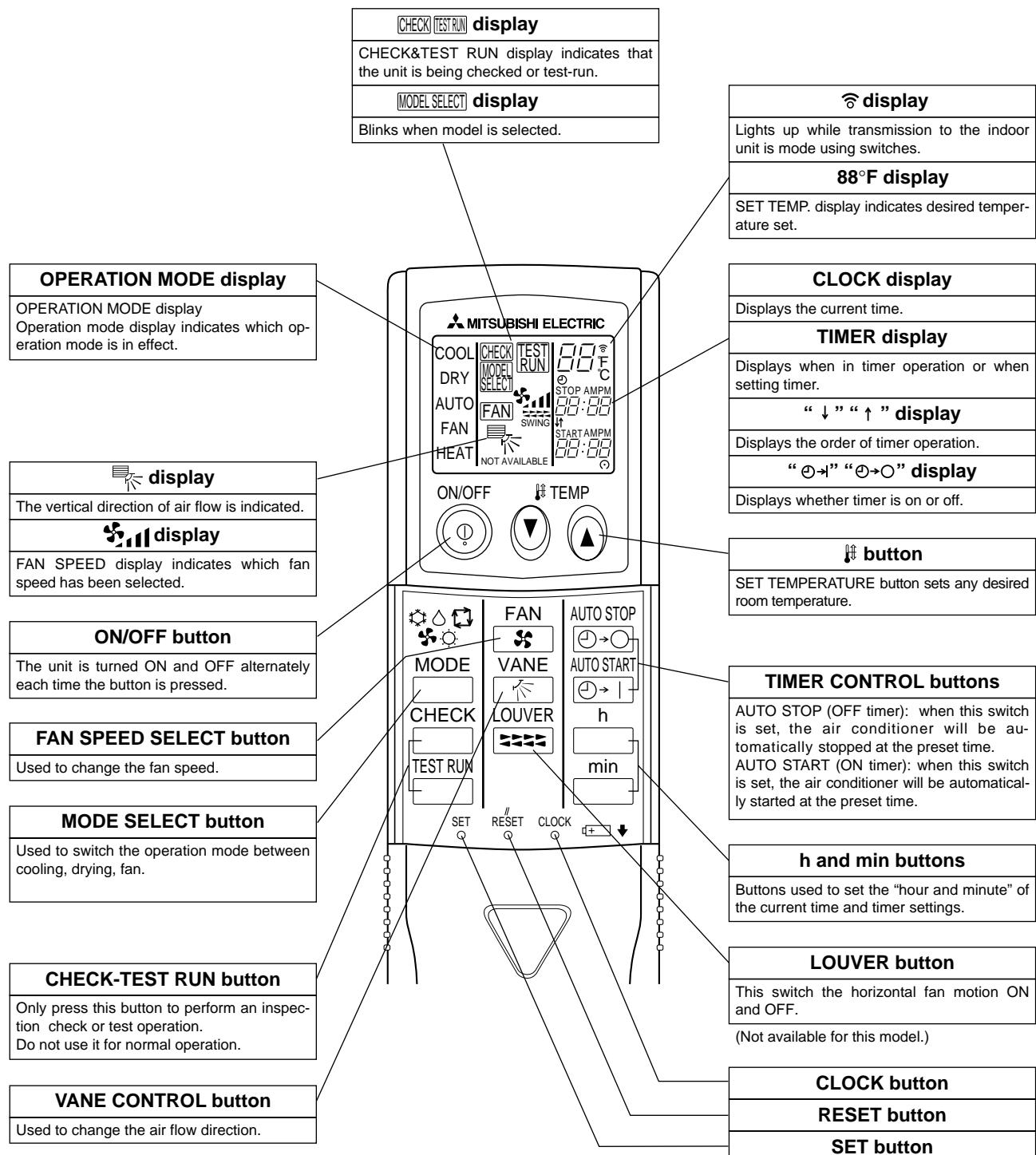
In addition to the self-diagnostic function, units are also equipped with a 3-minute time delay mechanism (cooling), an auto restart function, an emergency operation function, a test run switch, etc., to assure high reliability and easy servicing.

## 6. NITROGEN GAS IS CHARGED TO INDOOR UNIT

Indoor unit and refrigerant pipes are charged with nitrogen gas (N<sub>2</sub>) instead of R22 before shipment from the factory.

### ●Wireless remote controller

- When cover is open.



# SPECIFICATIONS

## MODELS : PKH18FL, PKH24FL, PKH30FL, PKH36FL

Item	Model	PKH18FL	PKH24FL	PKH30FL	PKH36FL
Capacity	Cooling *1 Btu/h	18,000	24,000	30,000	34,200
	Heating *1 Btu/h	18,600[24,100/25,100]	25,000[30,500/31,500]	33,000[39,100/40,500]	38,000[44,100/45,500]
	Heating *2 Btu/h	10,700[16,200/17,200]	14,700[20,200/21,200]	19,000[25,100/26,500]	19,600[25,700/27,100]
Moisture removal	Pints/h	5.3	7.0	9.1	10.5
Power Consumption	Cooling *1 kW	1.79	2.36	3.12	3.44
	Heating *1 kW	1.56[3.16/3.46]	2.37[3.97/4.27]	3.02[4.82/5.22]	3.54[5.34/5.74]
	Heating *2 kW	1.34[2.94/3.24]	1.92[3.52/3.82]	2.48[4.28/4.68]	2.65[4.45/4.85]
EER *1		10.1	10.2	9.6	9.9
SEER		11.1	10.2	10.6	10.5
HSPF		7.2	6.8	7.1	6.9
COP	*1	3.5	3.1	3.2	3.1
	*2	2.3	2.2	2.2	2.2
<b>INDOOR UNIT MODELS</b>		PKH18FL	PKH24FL	PKH30FL	PKH36FL
External finish			Munsell 3.4Y 7.7/0.8		
Power supply	V,phase,Hz		208/230,1,60		
Max.fuse size (time delay)	A		15		
Min.ampacity	A	12		13	
Fan motor	F.L.A.	0.5		0.6	
Booster heater	A(kW)	7.6/8.4[1.6/1.9]		8.7/9.6[1.8/2.2]	
Airflow Hi-Lo	Dry CFM	710-530		990-780	
	Wet CFM	640-480		890-700	
Sound level Hi-Lo	dB	FK1:48 -41		FK1:49-44	FK1:50-46
Unit drain pipe O.D.	in.		1-1/16 (or 7/8)		
Dimensions	W in.	55-1/8		66-5/32	
	D in.		9-1/4		
	H in.		13-3/8		
Weight	lb	57	57	66	66
<b>OUTDOOR UNIT MODELS</b>		PUH18EK	PUH24EK <sub>1</sub>	PUH30EK <sub>1</sub>	PUH36EK <sub>1</sub>
External finish			Munsell 5Y 7/1		
Power supply	V,phase,Hz		208/230,1,60		
Max.fuse size (time delay)	A	20	20	30	30
Min.ampacity	A	16	16	20	22
Fan motor	F.L.A.	0.75	0.65+0.65	0.75+0.75	0.75+0.75
Compressor	Model (type)	RH247NAB	NH33NBD	NH41NAD	NH47NAD
	R.L.A.	12	11.5	14.0	17.5
	L.R.A.	37	54	73	87
Crankcase heater	A(W)	0.11/0.12[23/28]	0.16/0.17[33/39]	0.16/0.17[33/39]	0.16/0.17[33/39]
Refrigerant control			Capillary tube		
Defrost method			Reverse cycle		
Sound level	dB	53	55	55	55
Dimensions	W in.	34-1/4		38-3/16	38-3/16
	D in.	11-5/8		13-9/16	13-9/16
	H in.	33-1/2	49-9/16	49-9/16	49-9/16
Weight	lb	131	202	245	246
<b>REMOTE CONTROLLER</b>			With indoor unit		
Control voltage (by built-in transformer)			Indoor unit-remote controller:DC12V. Indoor unit-outdoor unit:DC12V		
REFRIGERANT	Name		R22		
	Charge	5 lbs 8 oz	9 lbs 15 oz	10 lbs 2 oz	10 lbs 9 oz
	Oil <Model>	L	0.52 <MS-56>	1.2 <MS32N-1>	1.3 <MS32N-1>
<b>REFRIGERANT PIPING</b>			Not supplied(optional parts)		
Pipe size	Liquid in.		3/8	1/2	1/2
	Gas in.		5/8	3/4	3/4
Connection method	Indoors		Flared		
	Outdoors		Flared		
Between the indoor & outdoor units	Height difference ft	130		164	164
	Piping length ft	130		164	164

NOTES : \*1.Rating conditions (cooling)-indoor : 80°FDB,67°FWB outdoor : 95°FDB,75°FWB.

(heating)-indoor : 70°FDB,60°FWB outdoor : 47°FDB,43°FWB.

\*2.Rating conditions (heating)-indoor : 70°FDB,60°FWB outdoor : 17°FDB,15°FWB.

\*3.Heating capacity and power consumption in [ ] includes heater operation at 208/230V.

### Operating range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	95°FDB,71°FWB	115°FDB
	Minimum	67°FDB,57°FWB	0°FDB *
Heating	Maximum	80°FDB,67°FWB	75°FDB,65°FWB
	Minimum	70°FDB,60°FWB	17°FDB,15°FWB

\* In case of the wind baffle is installed.

(In case of the wind baffle is not installed, the minimum temperature will be 23°FDB.)

## MODELS : PKH18FL, PKH24FL, PKH30FL, PKH36FL

### 1. PERFORMANCE DATA

#### 1) COOLING CAPACITY

Models	Models		Outdoor intake air DB temperature(°F)															
	Airflow (CFM) B.F	IWB (°F)	75			85			95			105			115			
			TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	
PKH18FL	710 0.16	71	21.0	14.4	1.56	20.2	13.9	1.69	19.4	13.3	1.84	18.5	12.7	1.99	17.6	12.1	2.15	
		67	19.5	16.0	1.52	18.8	15.4	1.65	18.0	14.8	1.79	17.1	14.0	1.93	16.3	13.4	2.07	
		63	18.2	17.4	1.49	17.5	16.7	1.61	16.8	16.0	1.74	15.9	15.2	1.88	15.1	14.4	2.01	
	DB 75°F (50%RH)	62.5	18.1	15.5	1.49	17.4	14.9	1.61	16.6	14.3	1.74	15.8	13.6	1.87	15.0	12.9	2.00	
	DB 72°F (50%RH)	60	17.2	15.1	1.47	16.6	14.5	1.58	15.8	13.8	1.70	15.0	13.1	1.84	14.2	12.4	1.96	
	DB 70°F (50%RH)	59	16.8	14.5	1.46	16.2	14.0	1.57	15.5	13.4	1.69	14.6	12.6	1.83	13.9	12.0	1.94	
	710 0.16	71	27.9	16.1	2.05	26.9	15.5	2.23	25.8	14.9	2.43	24.6	14.2	2.63	23.4	13.5	2.84	
PKH24FL		67	26.1	18.5	2.01	25.1	17.8	2.18	24.0	17.0	2.36	22.9	16.3	2.55	21.7	15.4	2.73	
		63	24.3	20.5	1.97	23.4	19.7	2.12	22.4	18.9	2.30	21.3	18.0	2.47	20.1	17.0	2.65	
DB 75°F (50%RH)	62.5	24.1	18.0	1.96	23.2	17.4	2.12	22.2	16.6	2.29	21.1	15.8	2.47	19.9	14.9	2.64		
DB 72°F (50%RH)	60	23.0	17.6	1.94	22.1	16.9	2.09	21.1	16.2	2.25	20.1	15.4	2.41	18.9	14.5	2.58		
DB 70°F (50%RH)	59	22.5	17.0	1.93	21.7	16.4	2.07	20.7	15.6	2.24	19.7	14.9	2.39	18.5	14.0	2.56		
990 0.15	71	34.9	21.5	2.72	33.7	20.8	2.95	32.3	19.9	3.21	30.8	19.0	3.48	29.3	18.1	3.75		
	67	32.6	24.5	2.66	31.4	23.6	2.88	30.0	22.5	3.12	28.6	21.5	3.37	27.1	20.3	3.61		
	63	30.4	26.9	2.60	29.2	25.8	2.81	27.9	24.6	3.04	26.6	23.5	3.27	25.1	22.2	3.50		
PKH30FL	990 0.15	DB 75°F (50%RH)	62.5	30.2	23.8	2.59	29.0	22.9	2.80	27.7	21.9	3.03	26.3	20.7	3.26	24.9	19.6	3.49
		DB 72°F (50%RH)	60	28.8	23.2	2.57	27.6	22.2	2.77	26.3	21.2	2.99	24.9	20.1	3.21	23.5	18.9	3.43
		DB 70°F (50%RH)	59	28.2	22.4	2.56	27.0	21.5	2.76	25.7	20.4	2.98	24.4	19.4	3.19	22.9	18.2	3.41
	990 0.14	71	39.8	23.0	3.00	38.4	22.1	3.25	36.8	21.2	3.54	35.1	20.2	3.83	33.4	19.3	4.13	
		67	37.1	26.3	2.93	35.7	25.3	3.17	34.2	24.3	3.44	32.6	23.1	3.71	30.9	21.9	3.98	
		63	34.7	29.3	2.87	33.3	28.1	3.10	31.9	26.9	3.35	30.3	25.6	3.61	28.7	24.2	3.86	
	DB 75°F (50%RH)	62.5	34.4	25.8	2.86	33.1	24.8	3.09	31.6	23.7	3.34	30.0	22.5	3.59	28.4	21.3	3.85	
	DB 72°F (50%RH)	60	32.8	25.1	2.82	31.5	24.1	3.04	30.1	23.0	3.28	28.5	21.8	3.52	26.9	20.6	3.76	
	DB 70°F (50%RH)	59	32.2	24.3	2.81	30.8	23.2	3.03	29.5	22.3	3.26	27.9	21.0	3.50	26.4	19.9	3.73	

Notes 1. B.F. : Bypass Factor, IWB : Intake air wet-bulb temperature

TC : Total Capacity (x10<sup>3</sup> Btu/h), SHC : Sensible Heat Capacity (x10<sup>3</sup> Btu/h)

TPC : Total Power Consumption (kW)

2. SHC is based on 80°FDB of indoor intake air temperature.

3. Cooling capacity correction factors and Refrigerant piping length (one way) range.

MODEL	Refrigerant piping length (one way)									
	25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PKH18FL	1.0	0.992	0.983	0.978	0.966	0.959	0.950	0.945	—	—
PKH24FL	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PKH30FL	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PKH36FL	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874

## 2) HEATING CAPACITY

Models	Models		Outdoor intake air WB temperature(°F)										Auxiliary heater (208V) (230V)	
	Airflow (CFM)	IWBT (°F)	15		25		35		45		55		65	
			CA	PC	CA	PC	CA	PC	CA	PC	CA	PC	CA	PC
PKH18FL	710	75	12.1	1.20	14.1	1.34	16.3	1.49	18.7	1.65	21.4	1.83	23.7	1.99
		70	12.4	1.16	14.4	1.29	16.7	1.44	19.1	1.59	21.8	1.76	24.1	1.91
		65	12.7	1.11	14.7	1.24	17.0	1.38	19.5	1.53	22.2	1.69	24.5	1.83
PKH24FL	710	75	16.3	1.82	18.9	2.03	21.9	2.27	25.2	2.51	28.8	2.77	32.8	3.01
		70	16.6	1.76	19.4	1.96	22.4	2.19	25.7	2.42	29.3	2.67	33.3	2.90
		65	17.0	1.69	19.8	1.89	22.9	2.10	26.2	2.32	29.9	2.56	33.9	2.78
PKH30FL	990	75	21.5	2.32	25.0	2.59	28.9	2.89	33.2	3.20	38.0	3.53	43.2	3.86
		70	21.9	2.24	25.5	2.50	29.6	2.78	33.9	3.08	38.6	3.40	43.7	3.72
		65	22.5	2.15	26.1	2.40	30.2	2.68	34.6	2.96	39.4	3.26	44.6	3.56
PKH36FL	990	75	24.7	2.71	28.7	3.04	33.3	3.39	38.2	3.75	43.7	4.14	49.6	4.49
		70	25.3	2.62	29.4	2.93	34.1	3.26	39.0	3.61	44.5	3.98	50.4	4.28
		65	25.9	2.53	30.1	2.82	34.8	3.14	39.9	3.47	45.4	3.83	51.3	4.14

Notes 1. IDB : Intake air dry-bulb temperature

CA : Capacity ( $\times 10^3$  Btu/h), PC : Power Consumption (kW)

2. When booster heater is "on", total capacity and total power consumption should be added the figures described in booster heater column.

  - Booster heater ON : When the set temperature is higher than the room temperature by more than 5.4 deg.
  - Booster heater OFF : When the set temperature is higher than the room temperature by less than 3.6 deg.

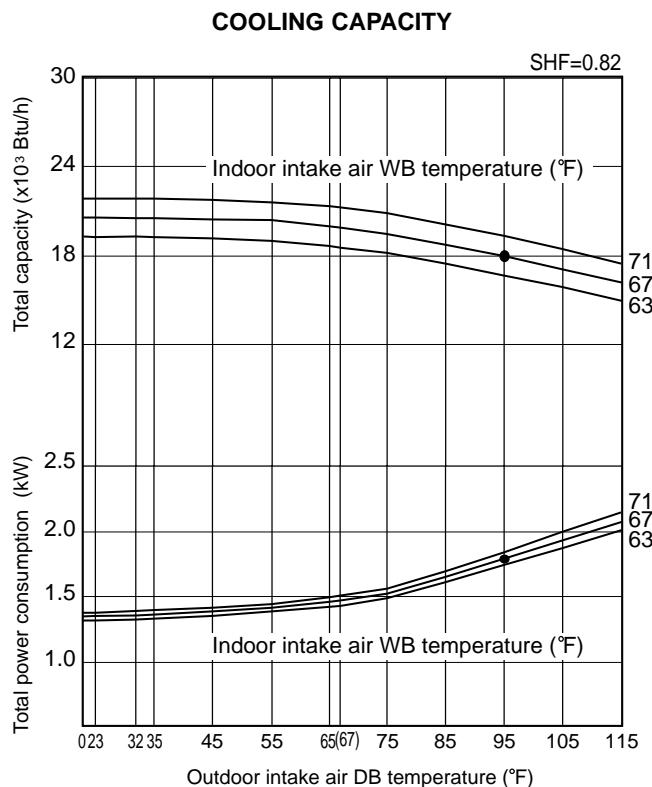
3. Heating capacity correction factors.

Models	Refrigerant piping length (one way)		
	Less than 100ft	100~130ft	130~164ft
PKH18FL	1.00	0.995	0.990
PKH24FL	1.00	0.995	0.990
PKH30FL	1.00	0.995	0.990
PKH36FL	1.00	0.995	0.990

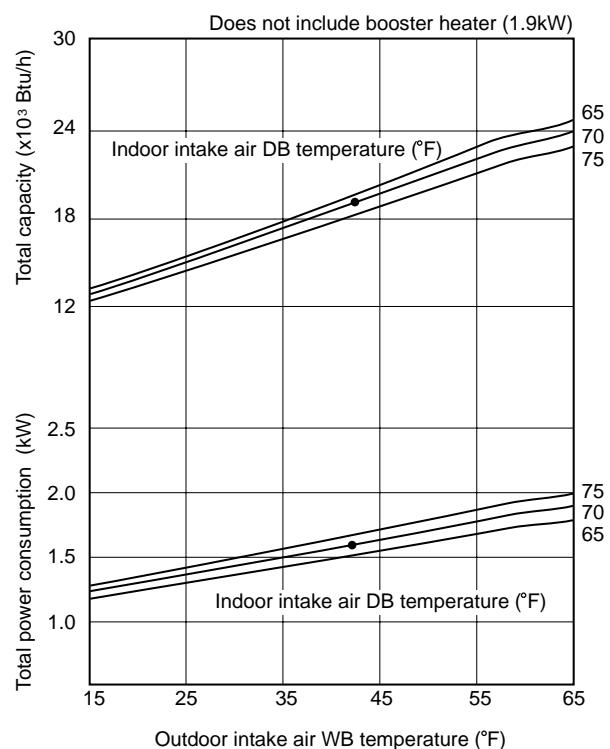
## 2. PERFORMANCE CURVE

NOTES : A point on the curve shows the reference point.

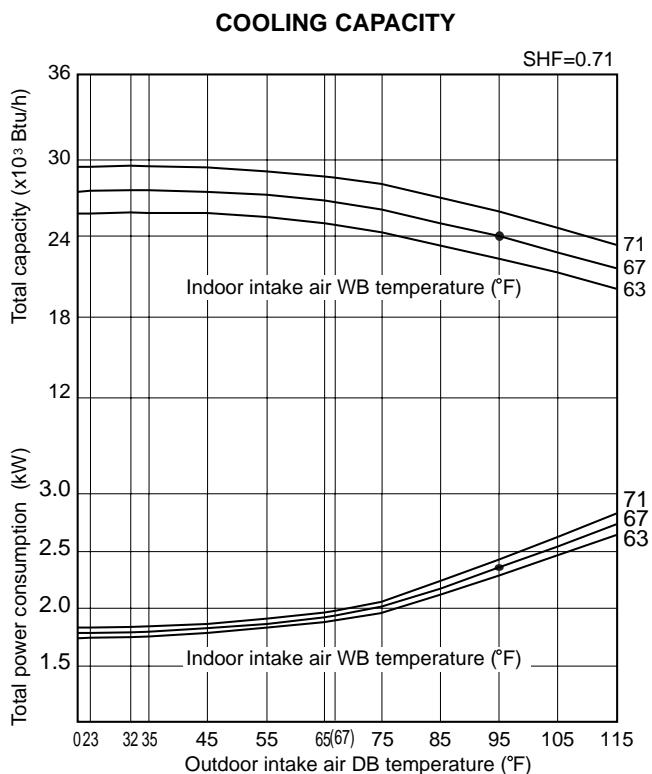
**<PKH18FL>**



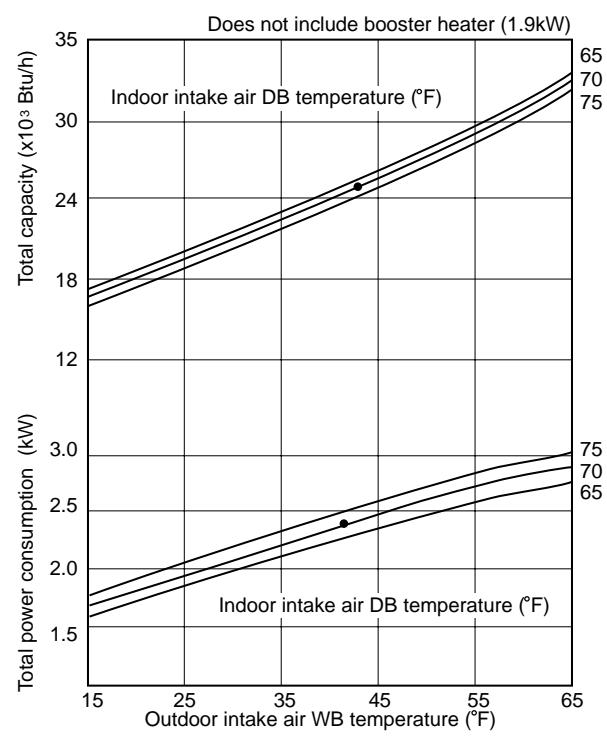
**HEATING CAPACITY**



**<PKH24FL>**

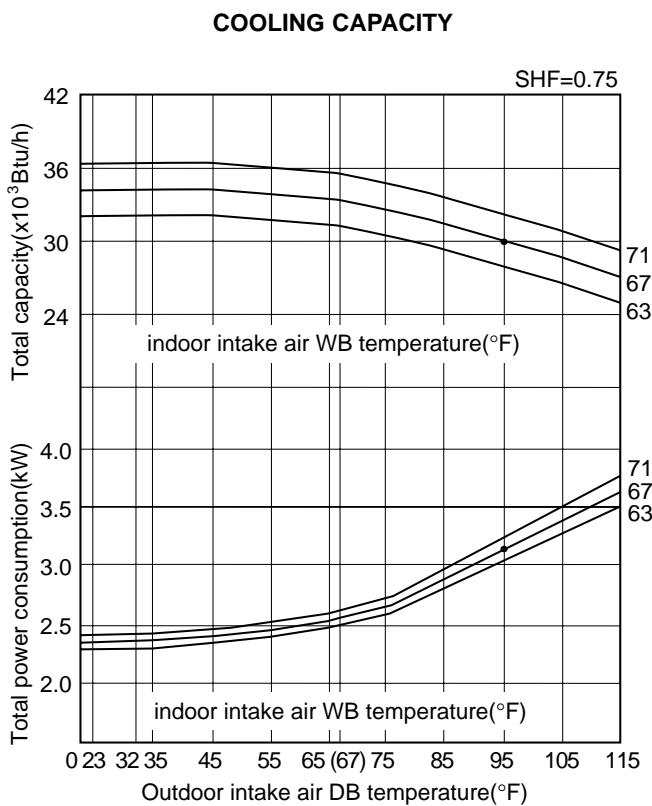


**HEATING CAPACITY**

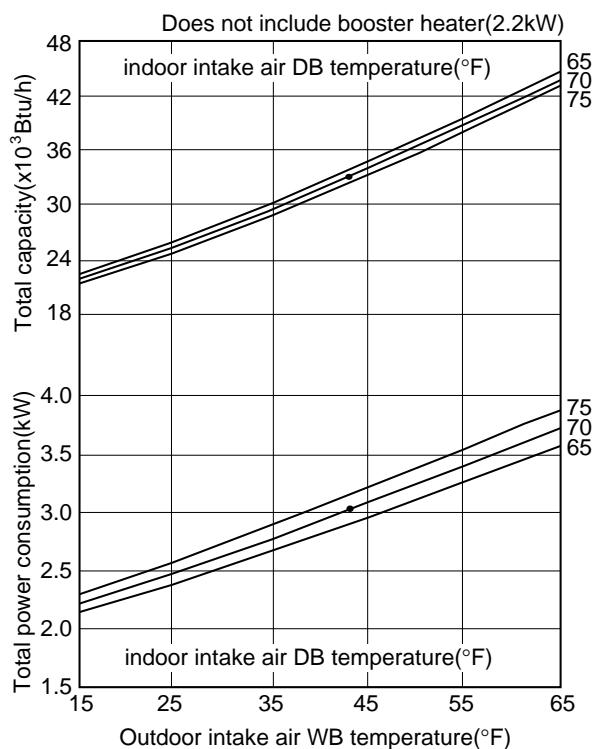


NOTES : A point on the curve shows the reference point.

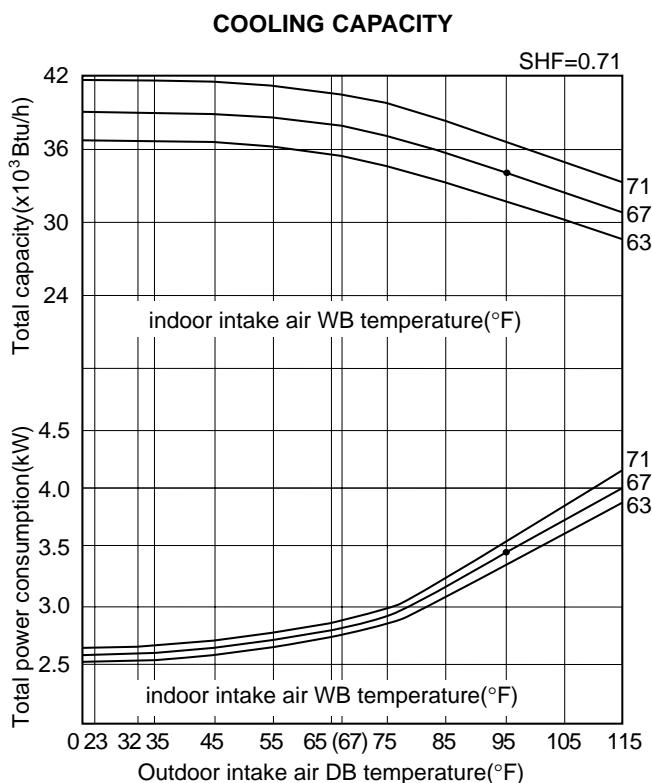
### <PKH30FL>



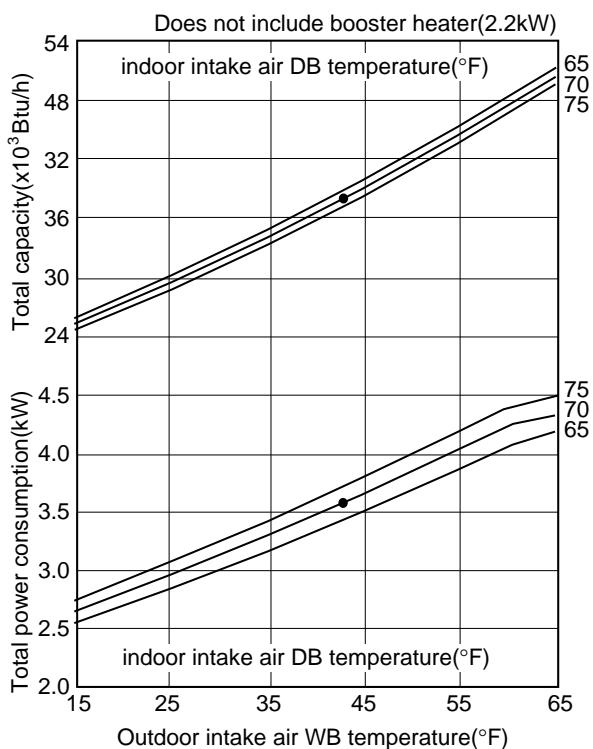
### HEATING CAPACITY



### <PKH36FL>



### HEATING CAPACITY



### 3. CONDENSING PRESSURE AND SUCTION PRESSURE

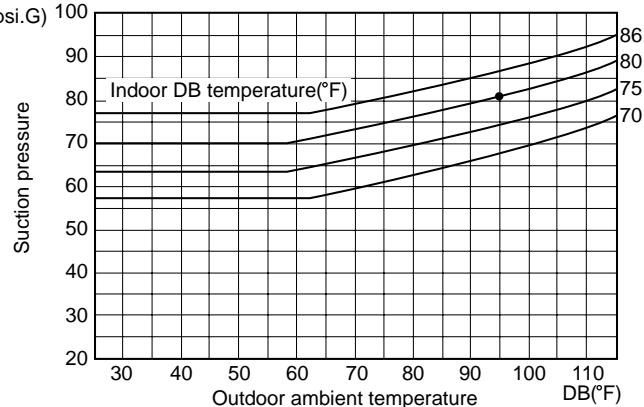
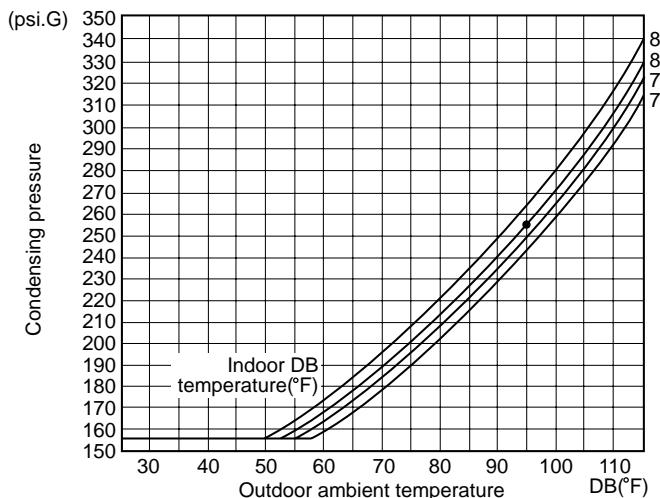
Data is based on the condition under indoor humidity 50%.

Air flow should be set at HI.

A point on the curve shows the reference point.

<PKH18FL>

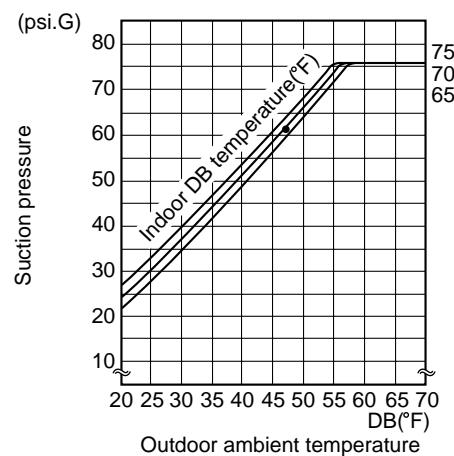
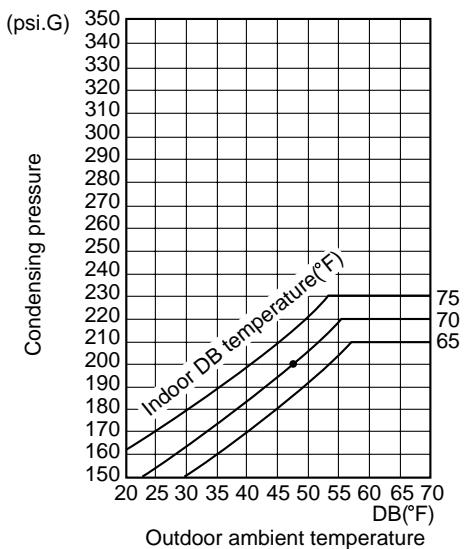
#### COOLING MODE



Data is based on the condition under outdoor humidity 75%.

A point on the curve shows the reference point.

#### HEATING MODE



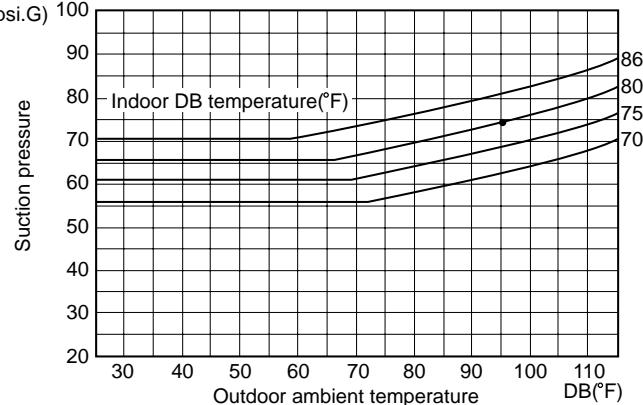
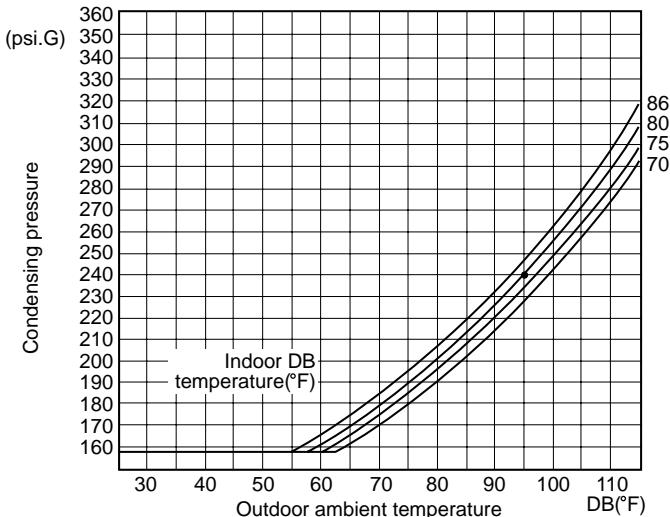
Data is based on the condition under indoor humidity 50%.

Air flow should be set at HI.

A point on the curve shows the reference point.

<PKH24FL>

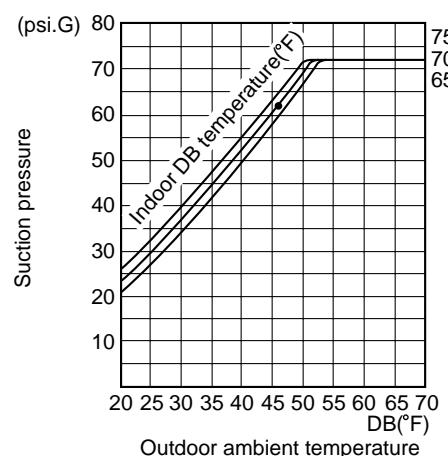
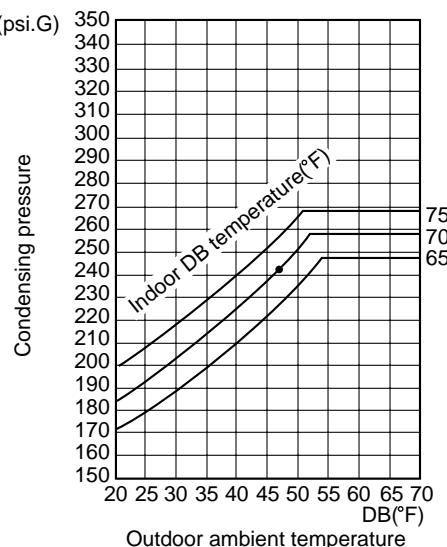
### COOLING MODE



Data is based on the condition under outdoor humidity 75%.

A point on the curve shows the reference point.

### HEATING MODE



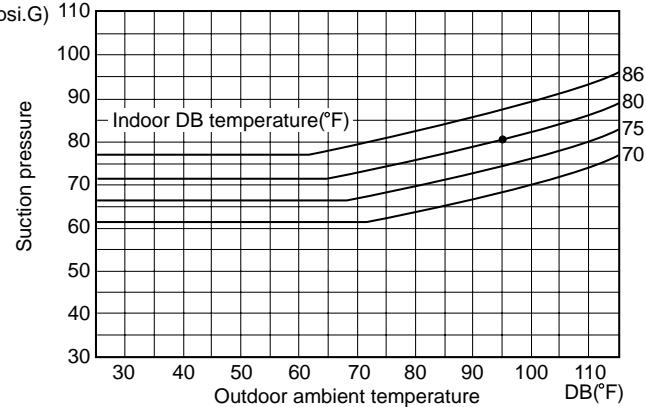
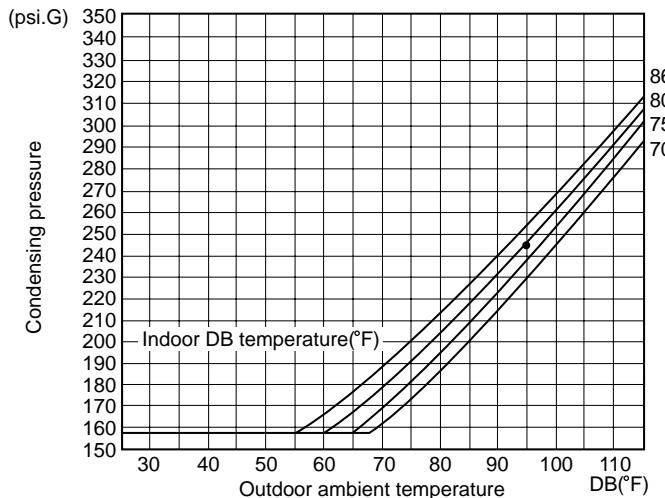
Data is based on the condition under indoor humidity 50%.

Air flow should be set at HI.

A point on the curve shows the reference point.

**<PKH30FL>**

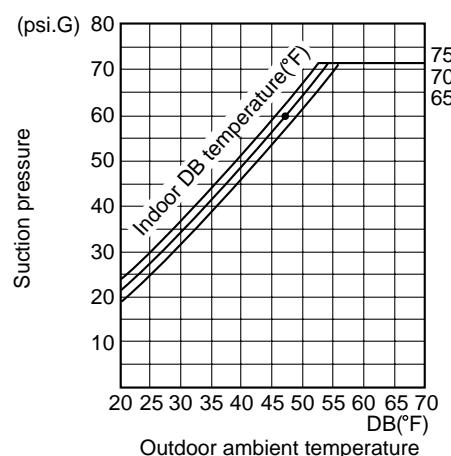
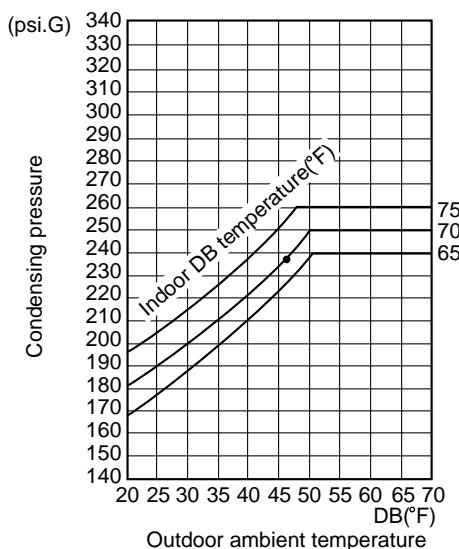
### COOLING MODE



Data is based on the condition under outdoor humidity 75%.

A point on the curve shows the reference point.

### HEATING MODE



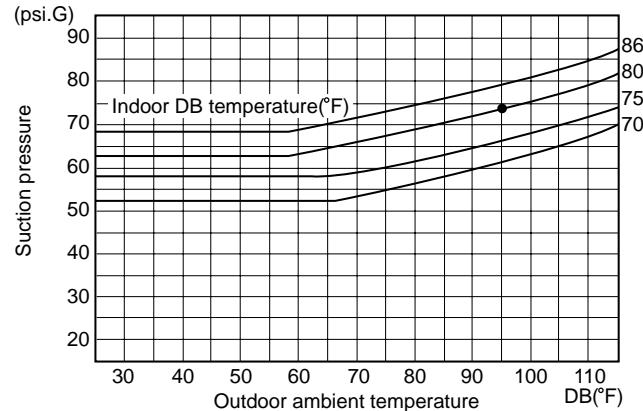
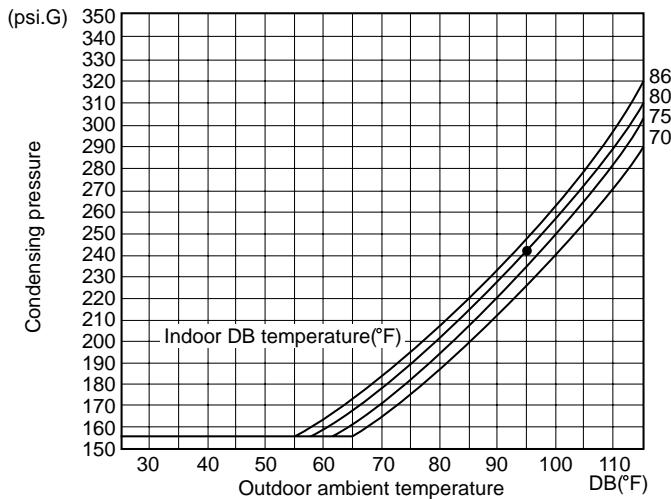
Data is based on the condition under indoor humidity 50%.

Air flow should be set at HI.

A point on the curve shows the reference point.

**<PKH36FL>**

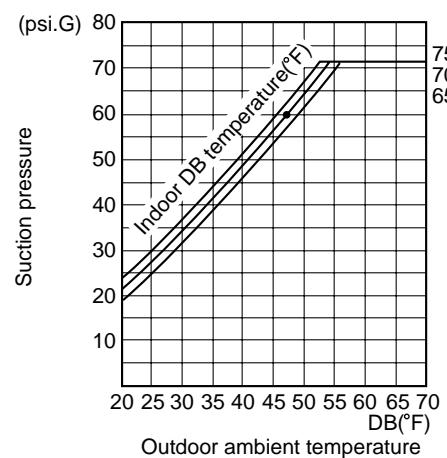
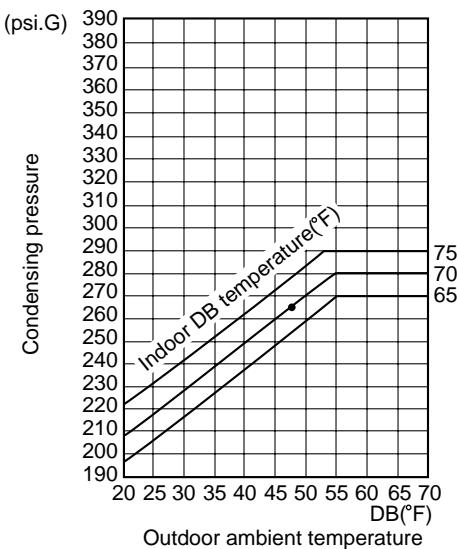
### COOLING MODE



Data is based on the condition under outdoor humidity 75%.

A point on the curve shows the reference point.

### HEATING MODE



#### 4. STANDARD OPERATION DATA

Models			PKH18FL		PKH24FL		PKH30FL		PKH36FL				
Item		Unit	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating			
Electrical circuit	Voltage	V	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230			
	Frequency	Hz	60		60		60		60				
	Total input	kW	1.79	1.56	2.36	2.37	3.12	3.02	3.44	3.54			
	Indoor fan current	A	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6			
	Booster heater current	A	—	7.6/8.4	—	7.6/8.4	—	8.7/9.6	—	8.7/9.6			
	Outdoor fan current	A	0.75	0.75	0.65+0.65	0.65+0.65	0.75+0.75	0.75+0.75	0.75+0.75	0.75+0.75			
	Comp. current	A	7.4/6.9	6.1/5.9	9.3/8.7	9.5/8.7	12.6/11.8	12.2/11.4	14.3/13.2	14.7/13.7			
Refrigerant circuit	Condensing pressure	psi.G	255	202	240	243	245	236	243	263			
	Suction pressure	psi.G	81	61	75	63	80	60	74	60			
	Discharge temperature	°F	182	126	158	149	158	159	160	170			
	Condensing temperature	°F	118	102	115	115	115	113	115	120			
	Suction temperature	°F	66	34	46	35	49	32	45	33			
	Comp.shell bottom temperature	°F	171	111	141	126	138	130	142	148			
	Ref. pipe length	ft	25		25		25		25				
Indoor side	Refrigerant charge	—	5 lbs 8 oz		9 lbs 15 oz		10 lbs 2 oz		10 lbs 9 oz				
	Intake air temperature	DB	°F	80	70	80	70	80	70	80	70		
		WB	°F	67	60	67	60	67	60	67	60		
	Discharge air temperature	DB	°F	61	96	58	105	59	103	58	109		
		WB	°F	59	68	56	70	58	70	56	71		
	Fan speed	r.p.m.	1,310		1,310		1,400		1,400				
	Airflow (High)	CFM	710		710		990		990				
Outdoor side	Intake air temperature	DB	°F	95	47	95	47	95	47	95	47		
		WB	°F	75	43	75	43	75	43	75	43		
	Fan speed upper/lower		r.p.m.	790		750/750		760/760		760/760			
	Airflow		CFM	1,590		3,170		3,350		3,350			
Capacity			Btu/h	18,000	18,600	24,000	25,000	30,000	33,000	34,200	38,000		
SHF			—	0.82	—	0.71	—	0.75	—	0.71	—		

## 5. OPERATING RANGE

### 1) POWER SUPPLY

1 Phase 60Hz 208/230V Guaranteed voltage range	Min. 198V	208V	230V	Max. 253V
	-----			-----

### 2) OPERATION

Function	Air intake temperature Condition	Indoor		Outdoor	
		DB(°F)	WB(°F)	DB(°F)	WB(°F)
Cooling	Standard temperature	80	67	95	75
	Maximum temperature	95	71	115	—
	Minimum temperature	67	57	*0	—
	Maximum humidity	80	75	80	75
Heating	Standard temperature	70	60	47	43
	Maximum temperature	80	67	75	65
	Minimum temperature	70	60	17	15

\* With wind baffle D.B. 23°F if no wind baffle.

## 6. OUTLET AIR SPEED AND COVERAGE RANGE

Model	Airflow (CFM)	Air speed (ft/sec)	Coverage range(ft)
PKH18FL	710	16.1	41
PKH24FL	710	16.1	41
PKH30FL	990	17.7	50
PKH36FL	990	17.7	50

The air coverage range is the value up to the position where the air speed is 0.8ft/sec. when air is blown out horizontally from the unit at the High notch position. The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture installed inside the room.

## 7. ADDITIONAL REFRIGERANT CHARGE (R22(oz))

Model	Outdoor unit precharged (up to 100ft)	Refrigerant piping length (one way)									
		25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PKH18FL	5 lbs 8 oz	0	0	0	0	0	0	2	4	—	—
PKH24FL	9 lbs 15 oz	0	0	0	0	0	0	2	4	7	9
PKH30FL	10 lbs 2 oz	0	0	0	0	0	0	5	10	16	20
PKH36FL	10 lbs 9 oz	0	0	0	0	0	0	5	10	16	20

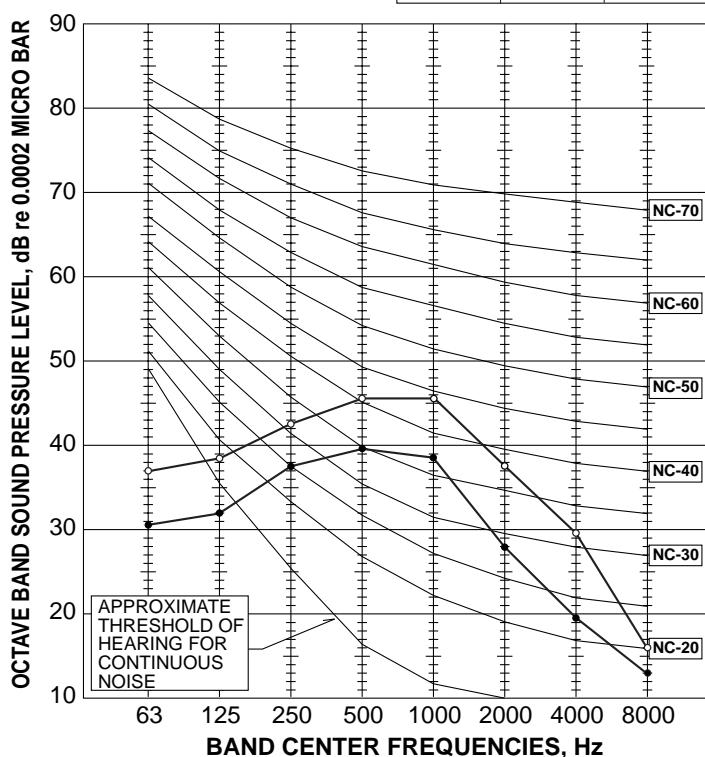
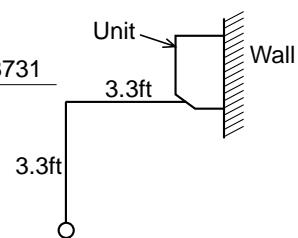
## 6. NOISE CRITERION CURVES

Ambient temperature 80°F

Test conditions are based on JIS Z8731

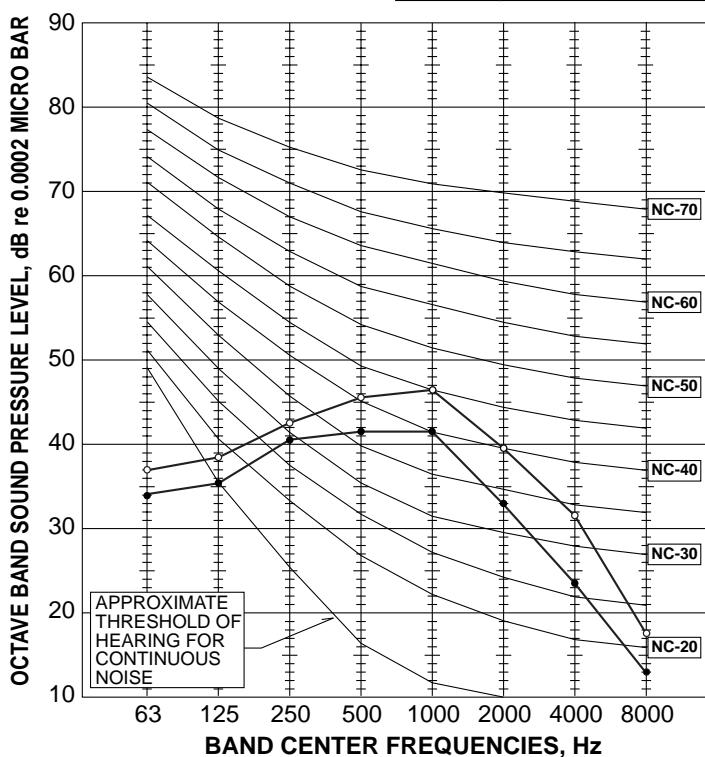
**PKH18FL**  
**PKH24FL**

NOTCH	SPL(dB)	LINE
Hi	48	○—○
Lo	41	●—●



**PKH30FL**  
**PKH36FL**

NOTCH	SPL(dB)	LINE
Hi	49	○—○
Lo	44	●—●

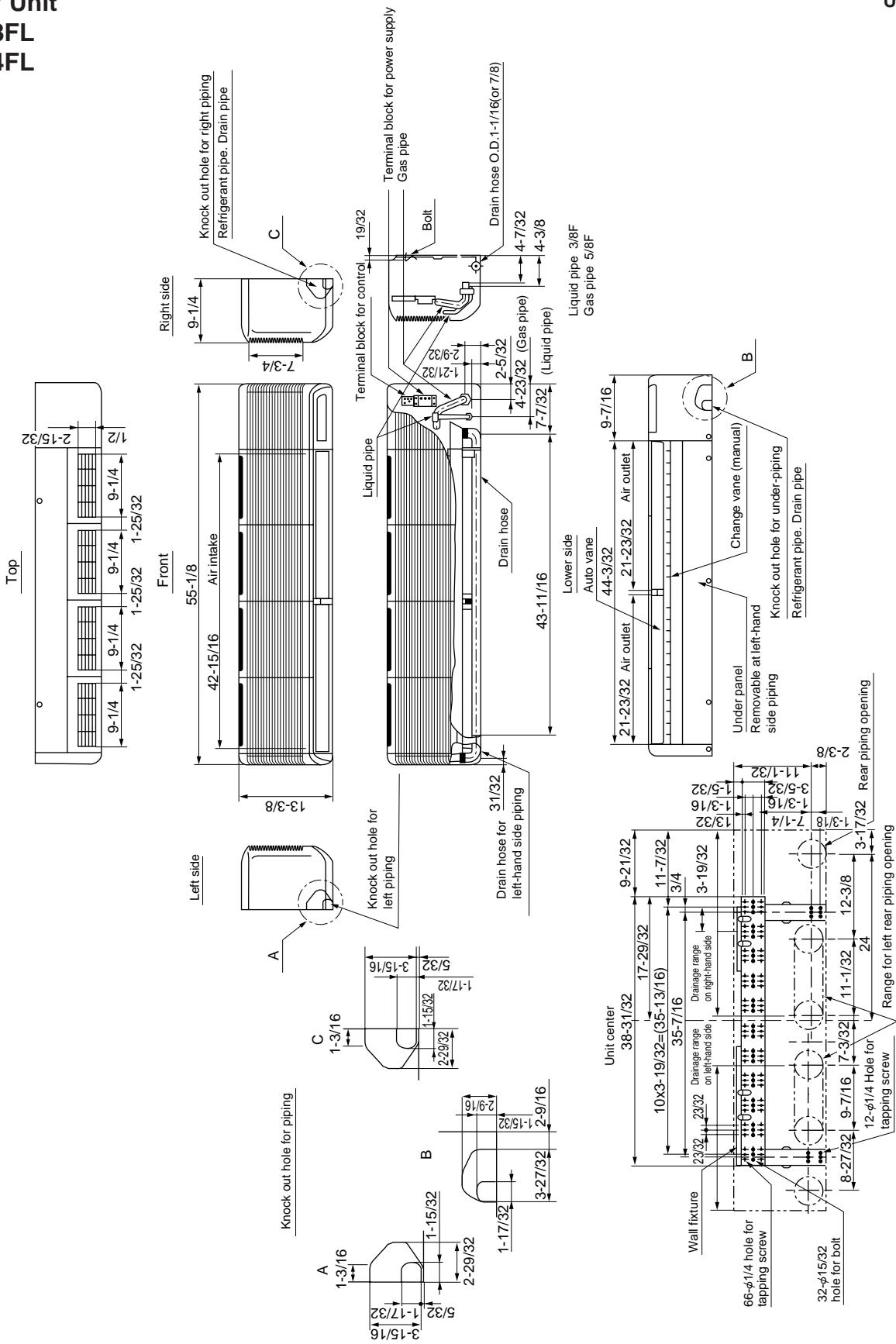


## **Indoor Unit**

**PKH18FL**

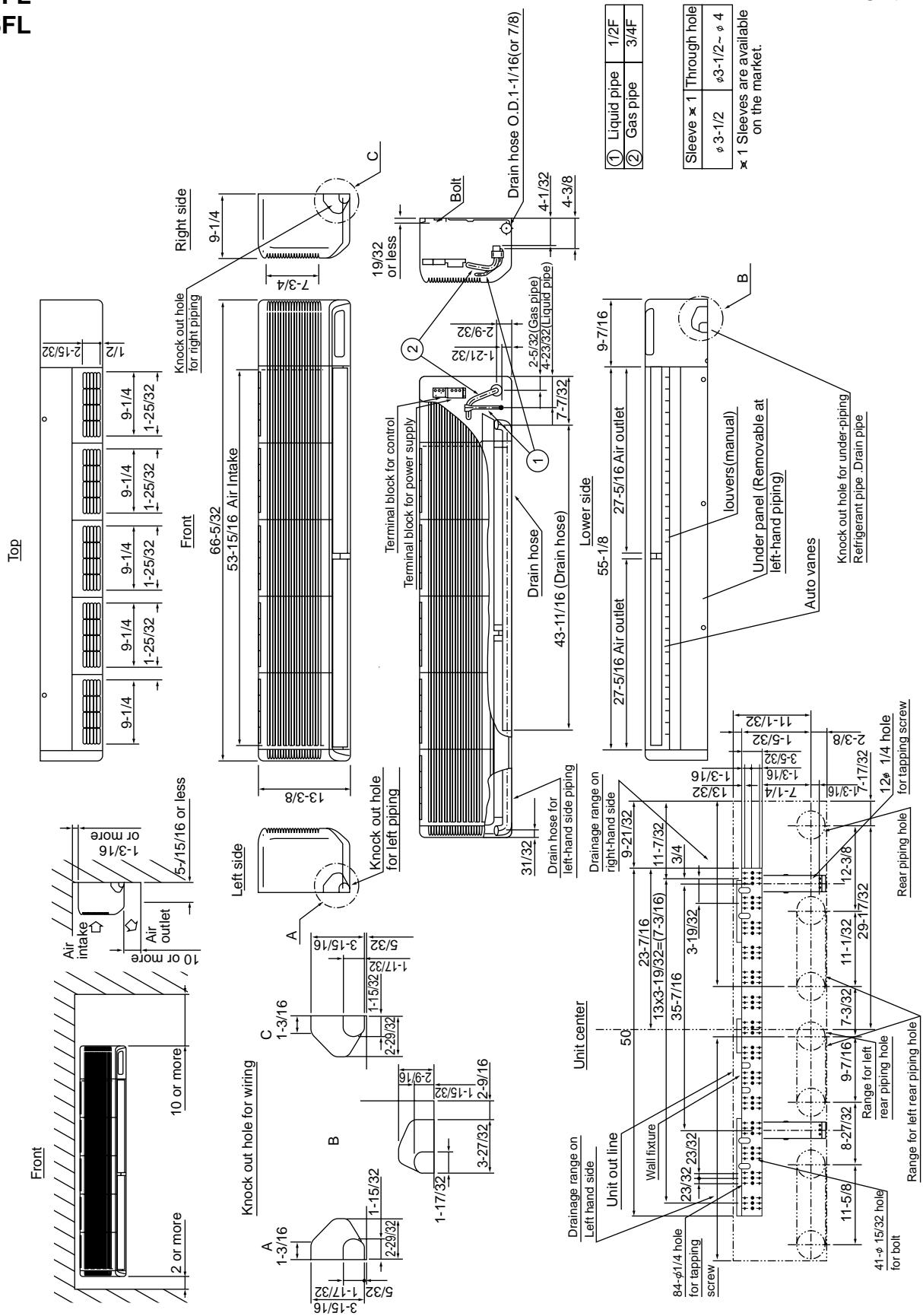
**PKH24FL**

**Unit : inch**



**PKH30FL**  
**PKH36FL**

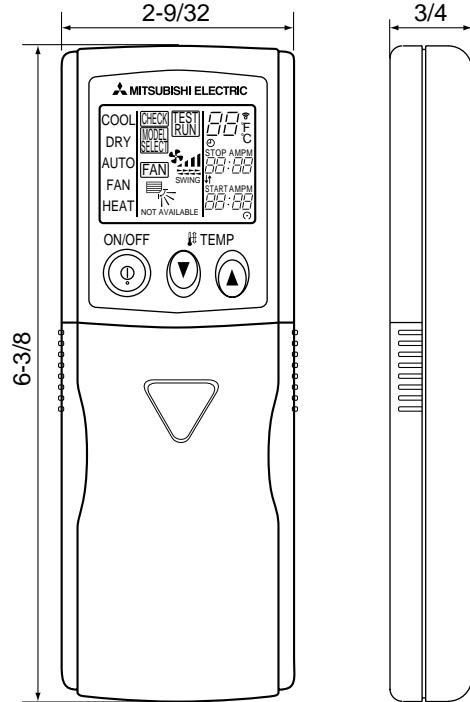
**Unit : inch**



## Remote controller

Unit : inch

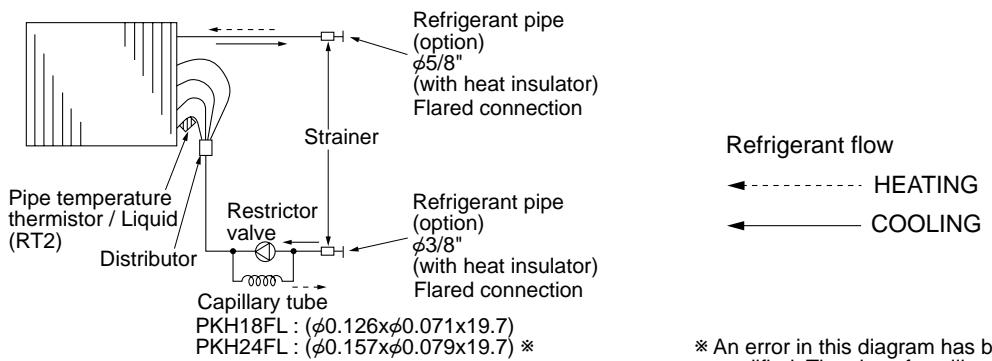
### WIRELESS REMOTE CONTROLLER



6

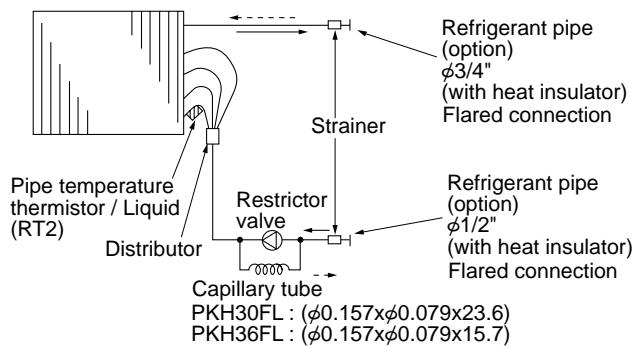
## REFRIGERANT SYSTEM DIAGRAM

### PKH18FL PKH24FL



\* An error in this diagram has been modified. The size of capillary tube  $\phi 0.157 \times 0.07 \times 19.7$ , was wrong.

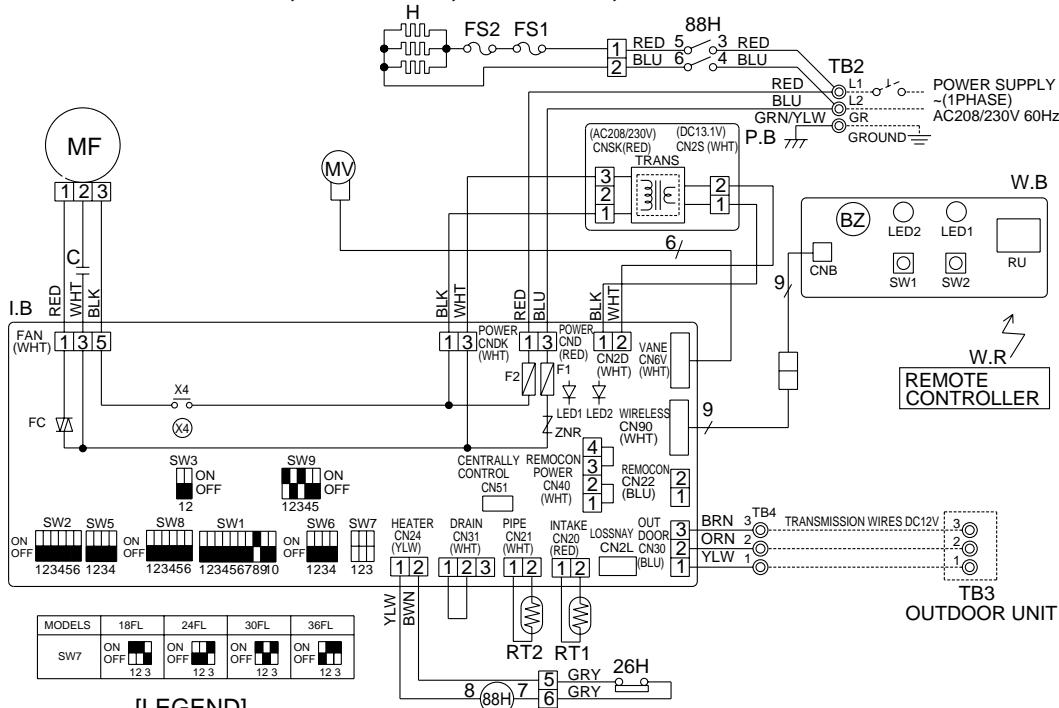
### PKH30FL PKH36FL



7

# WIRING DIAGRAM

## **MODELS PKH18FL, PKH24FL, PKH30FL, PKH36FL WIRING DIAGRAM**



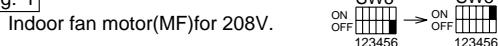
[LEGEND]

SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	MV	VANE MOTOR
I.B	INDOOR CONTROLLER BOARD	TB2-TB6	TERMINAL BLOCK
CN2L	CONNECTOR(LOSSNAY)	RT1	ROOM TEMPERATURE THERMISTOR (32°F /15kΩ, 77°F /5.4kΩ DETECT)
CN51	CONNECTOR(CENTRALLY CONTROL)	RT2	PIPE TEMPERATURE THERMISTOR/LIQUID (32°F /15kΩ, 77°F /5.4kΩ DETECT)
FC	FAN PHASE CONTROL	W.R	WIRELESS REMOTE CONTROLLER
SW1	SWITCH(FUNCTION SELECTOR)	W.B	WIRELESS REMOTE CONTROLLER BOARD
SW2	SWITCH(ADDRESS SELECTOR)	RU	RECEIVING UNIT
SW3	SWITCH(EMERGENCY OPERATION)	BZ	BUZZER
SW5	SWITCH(MODEL SELECTOR)	LED1	LED(RUN INDICATOR)
SW6	SWITCH(TWIN/TRIPLE SELECTOR)	LED2	LED(HOT ADJUST)
SW7	SWITCH(MODEL SELECTOR)	SW1	SWITCH(HEATER ON/OFF)
SW8	SWITCH(OPTION)	SW2	SWITCH(COOLING ON/OFF)
SW9	SWITCH(MODEL SELECTOR)	HEATER	THERMAL FUSE 243°F ,10A(18,24FL)/16A(30,36FL)
X4	RELAY(FAN MOTOR)		
F1,F2	FUSE(6A/250V)	H	HEATER
ZNR	VARISTOR	26H	HEATER THERMAL SWITCH
LED1	LED(DC12V POWER)	88H	HEATER CONTACTOR
LED2	LED(DC5V POWER)		
C	CAPACITOR(FAN MOTOR)		
MF	FAN MOTOR		

## NOTES:

- 1.Since the indoor fan motor(MF)is connected with 230V power,if 208V power is used,change the dip switch(SW8)on the indoor controller board as shown in fig.\*1.

fig:\*1



2. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.

2. Since the outdoor side electric wiring may change so care is check the outdoor unit electric wiring for 3. Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers.

4. Symbols used in wiring diagram above are, □ : Connector, ☺ : Terminal block.

## 5 Emergency operation

If remote controller or microcomputer fails but there is no other trouble emergency operation is possible by setting dip switch(SW3-L B>) on the indoor controller board.

[Check items]

- (1) Make sure that no other trouble exist in the outdoor unit. Trouble with the outdoor unit prevents emergency operation.

(1) Make sure that no other trouble exist in the outdoor unit. Trouble with the outdoor unit prevents emergency operation.  
(2) Make sure that there is no trouble with the indoor fan.

(2) Make sure that there is no fire.

- [Emergency operation procedure] Emergency operation will be continuous run with the power. On/Off (On/Off with the remote controller is not possible).

(1) Set the dip switch(SW3<1.B>)on the indoor controller board to 1 on and 2 off.

(2) Turn on outdoor unit side circuit breaker,then indoor unit side circuit breaker.

(3) During emergency operation indoor fan runs at high speed but auto-vane does not work.

(4) Thermostat will not function. Cold air blows out for defrosting.

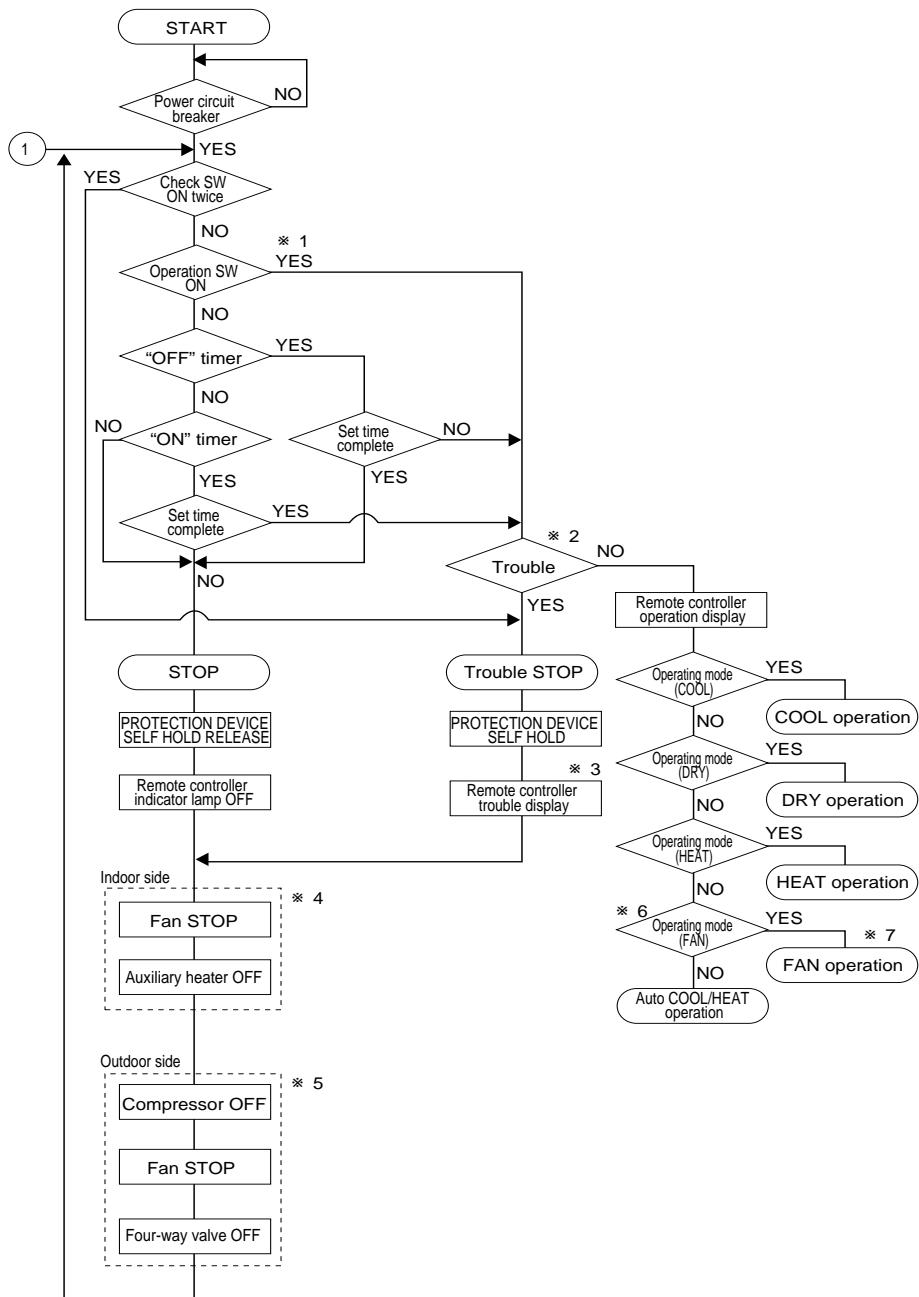
(5) Emergency cooling should be limited to 10 h.

(the indoor unit heat exchanger may freeze).

(6) After every emergency operation, set all dip switches(SW3<1.B>) to OFF.

(7) Movement of the vanes does not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

## MAIN OPERATION



\*1 In addition, the centralised control and remote control can be operated.

\*2 The modes which indicate the sources of trouble are listed below.

- E0-Signal transmitting/receiving error
- P1-Room temperature thermistor malfunction
- P2-Indoor coil thermistor malfunction
- P4-Drain sensor malfunction
- P5-Drain overflow
- P6-Coil frost/overheat protection
- P7-System error
- P8-Outdoor unit trouble

\*3 The CHECK switch will show if an error has occurred in the past.

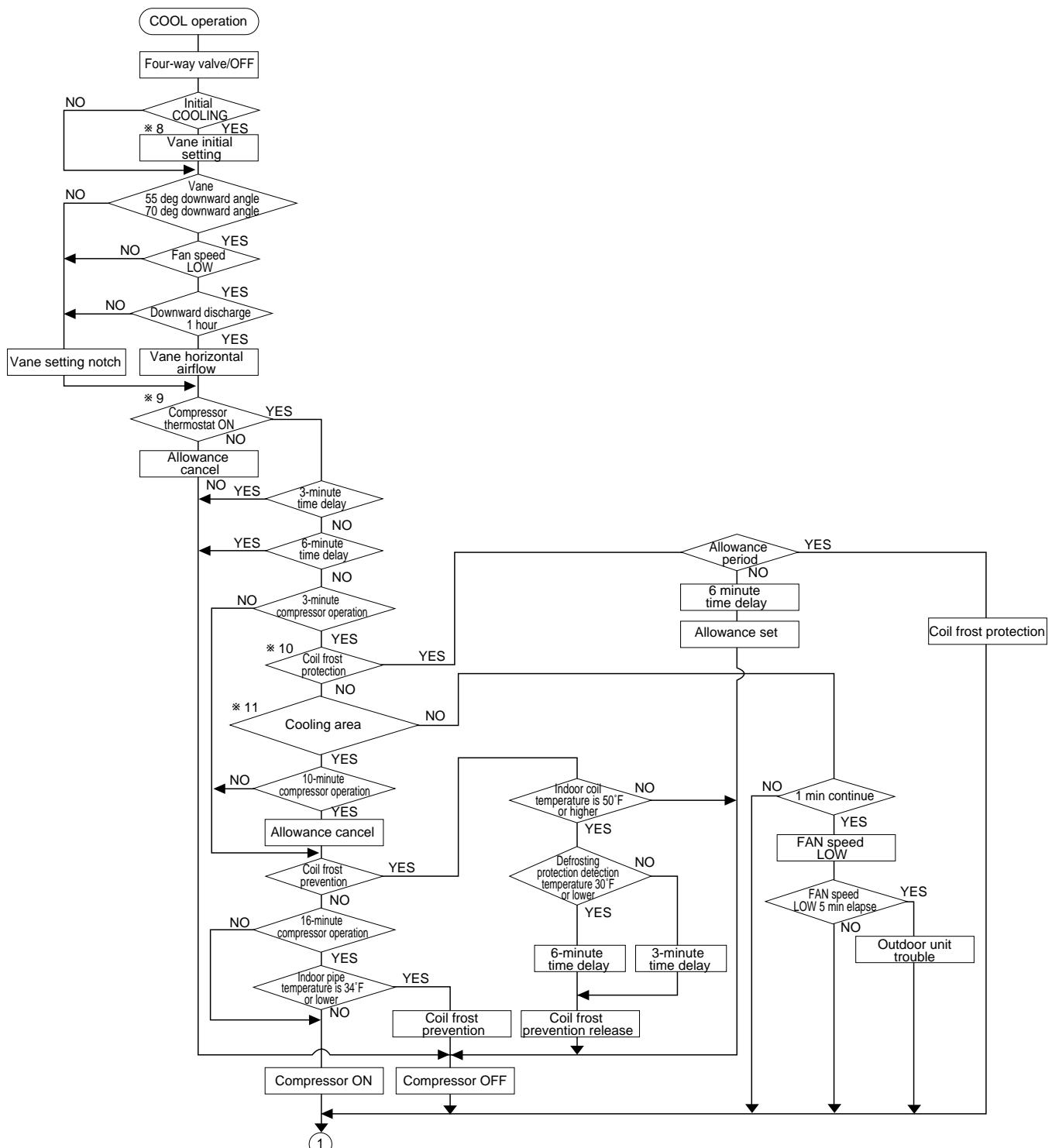
\*4 Fan runs on low speed for 1 minute in order to remove overheat air.

\*5 The 3-minute (6 minutes ... heating mode) time-delay functions after compressor stops.

\*6 FAN or AUTO mode is selected by the indoor dip switch setting.

\*7 In FAN mode, fan speed and vane operation depend on the remote controller setting. (Compressor is OFF.)

## COOLING OPERATION



\*8 When operation stops or changes to cooling or dry mode, the auto vane turns to a horizontal angle. If operation changes during auto vane SWING, the auto vane will continue to swing.

\*9 When operating TEST RUN, the thermostat will be continuously ON.

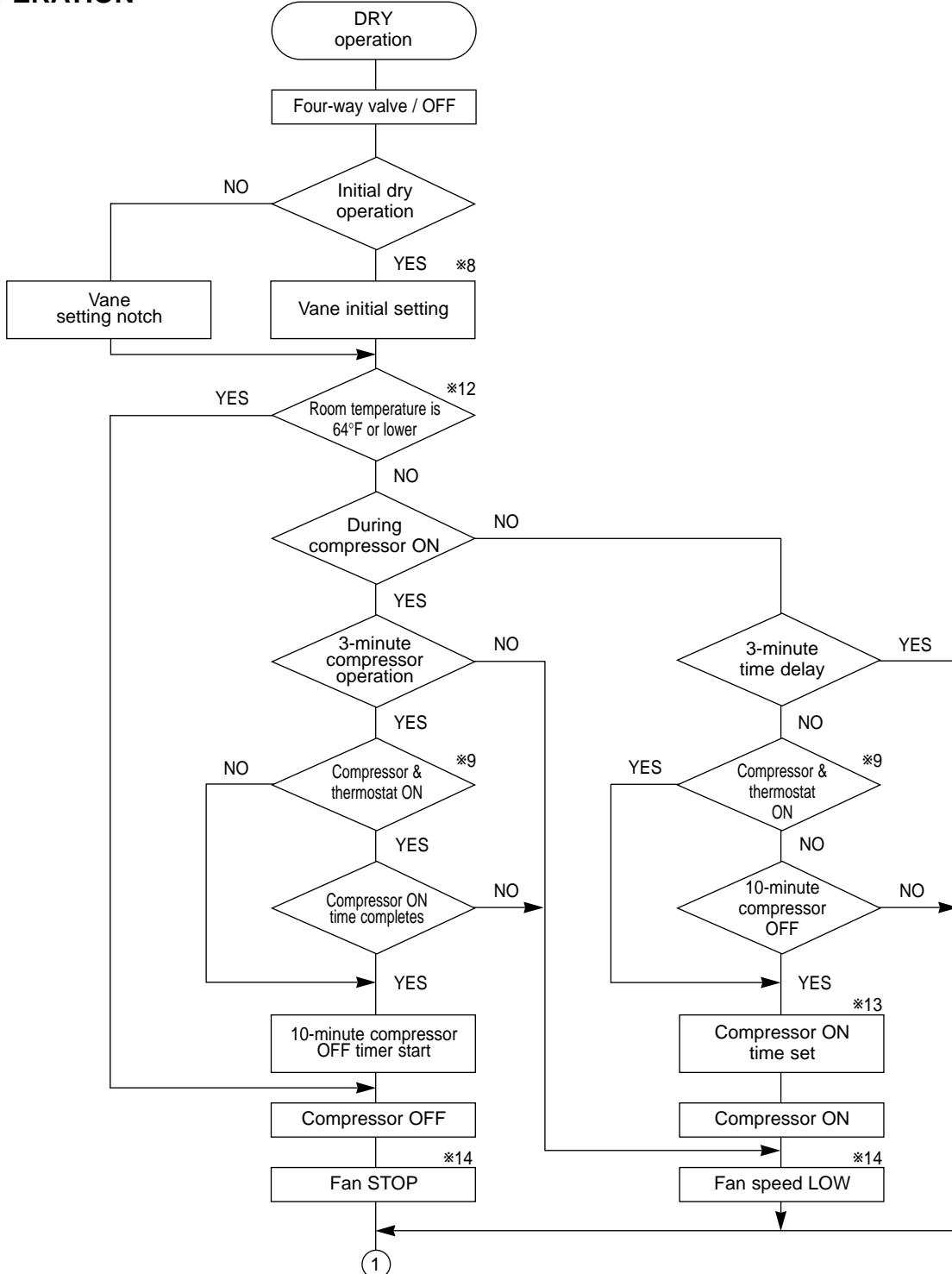
\*10 After 3 minute compressor operation, if the indoor coil thermistor reads 5°F or below for 3 minutes, the compressor will stop for 6 minutes.

\*11 Heating area : Indoor coil temperature is more than 9 degrees above the room temperature.

Cooling area : Indoor coil temperature is more than 9 degrees below the room temperature.

FAN area : Indoor coil temperature is within 9 degrees either way of the room temperature.

## DRY OPERATION



\*8—9 Refer to page OC276-21.

\*12 When room temperature is 64°F or below, the compressor cannot operate.

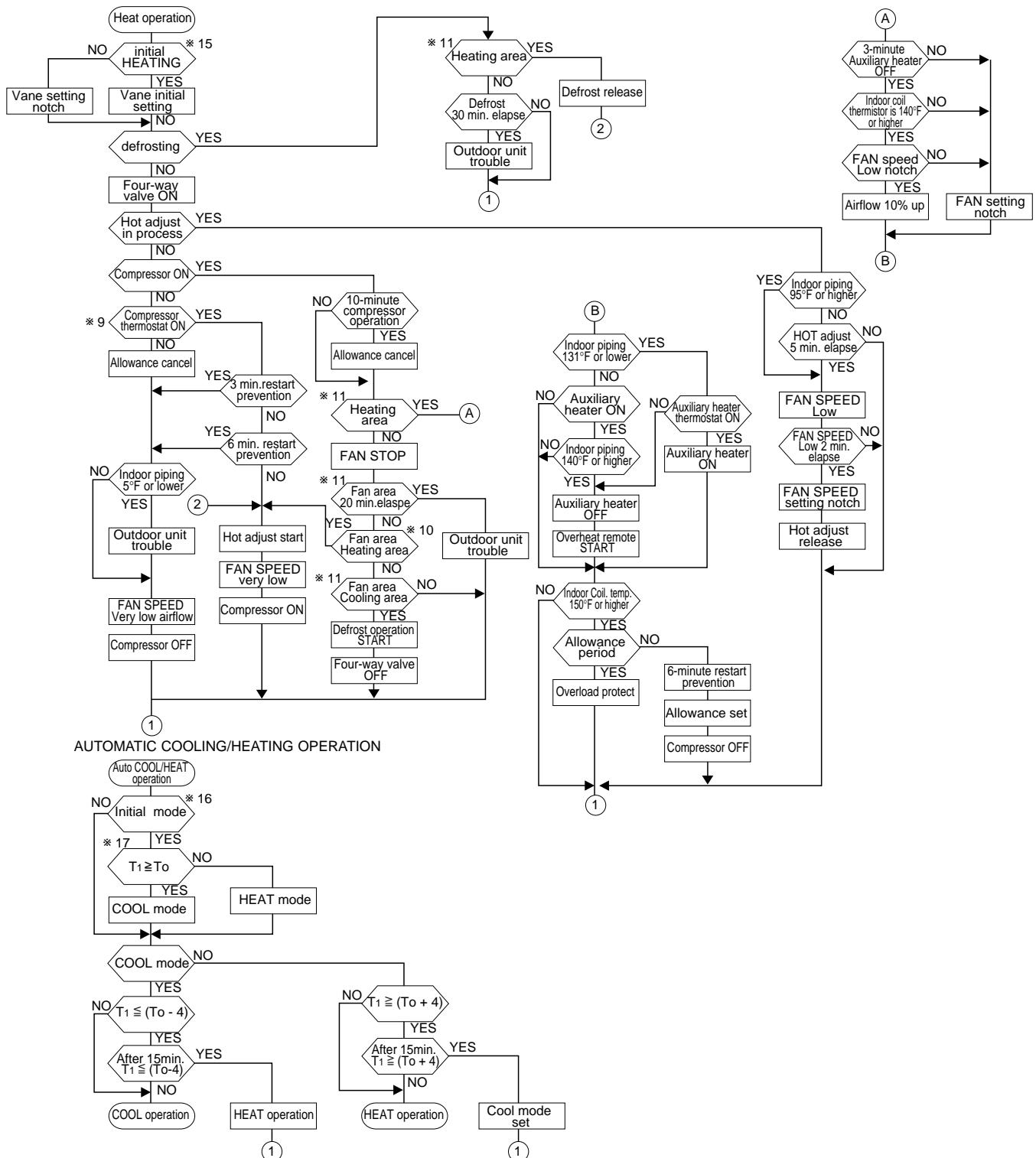
When room temperature rises over 64°F the compressor starts after a 3-minute time delay.

\*13 Compressor ON time is decided by room temperature. Refer to page OC276-30.

\*14 In dry operation, compressor ON makes the fan speed LOW. Also, when the compressor OFF and the pipe temperature is 79°F or less, the fan stops, or when the compressor OFF and the pipe temperature is below 43°F the fan speed changes to LOW mode.

It is not possible to set the fan speed with the remote controller

## **HEATING OPERATION**



\*15 ( i ) Until Low airflow is set while in hot adjustment

(ii) While defrosting (FAN STOP)

(iii) When defrosting (TAN 3)

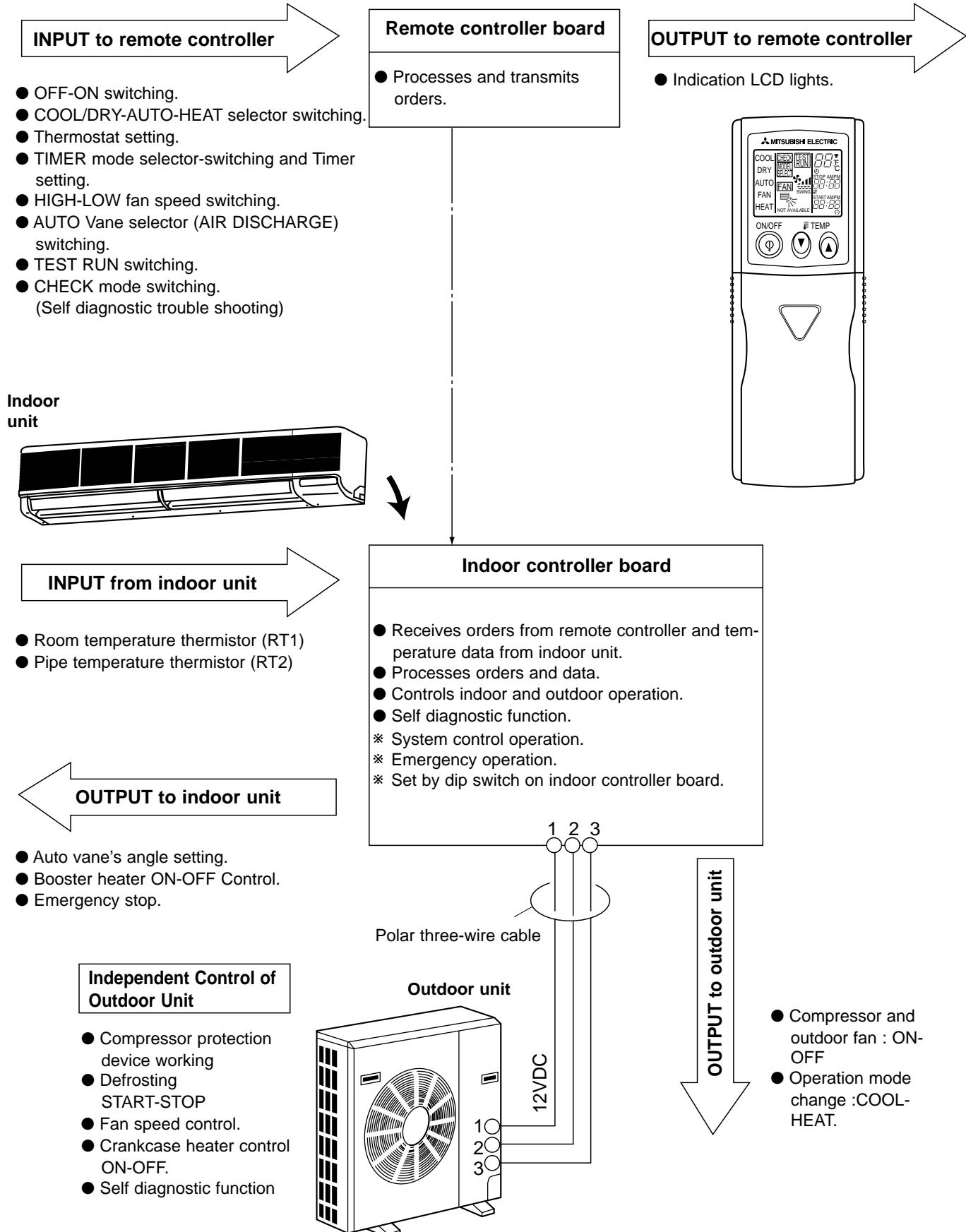
In the case of (i), (ii) and (iii) above, airflow is horizontal regardless the VANE setting.

\*16 When AUTO operation is started, COOL or HEAT mode is selected automatically.

\*16 When AUTO operation is

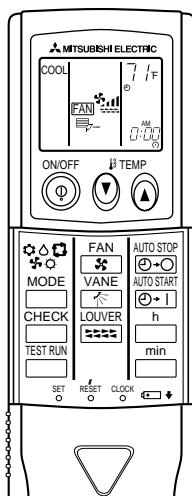
To : Set temperature

## 1. OUTLINE OF MICROPROCESSOR CONTROL



## 2. INDOOR UNIT CONTROL

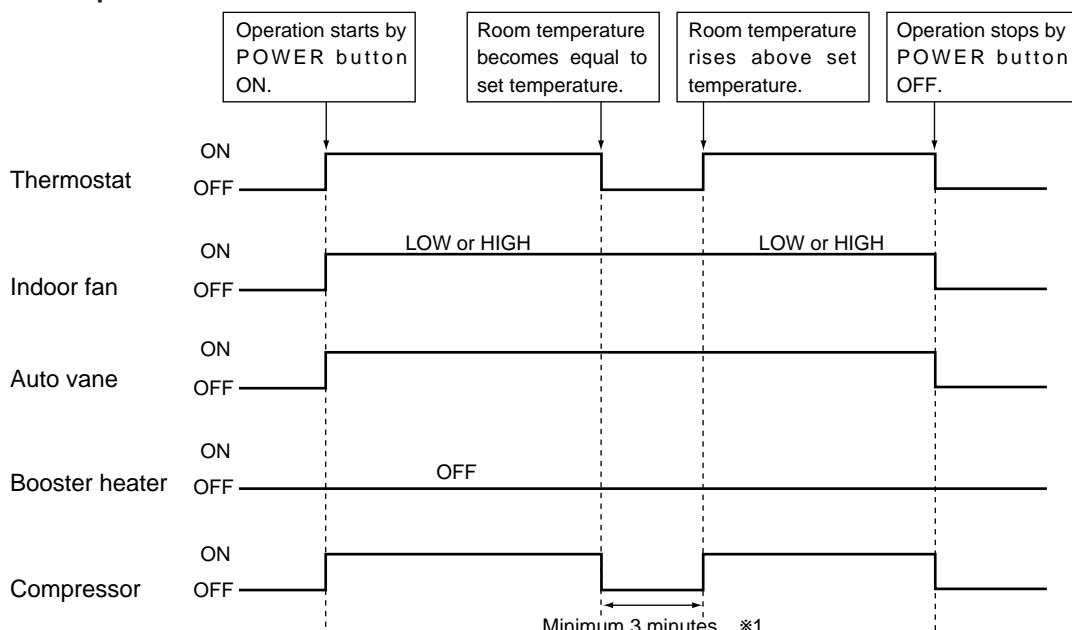
### 2-1 COOL operation



#### <How to operate>

- ① Press POWER ON/OFF button.
  - ② Press the MODE button to display COOL.
  - ③ Press the TEMP(Ⓐ or Ⓣ) button to set the desired temperature.
- NOTE:** Set temperature changes 2°F when the TEMP(Ⓐ or Ⓣ) button is pressed one time.  
Cooling 65 to 87°F.

#### <COOL operation time chart>



\*1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

## (1) Compressor control

### ① 3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

### ② The compressor runs when room temperature is higher than set temperature.

The compressor stops when room temperature is equal to or lower than the set temperature.

The compressor maintains the previous state when the room temperature minus the set temperature is 0 degrees or more, or lower than 2 degrees.

### ③ The compressor stops in check mode or during protective functions.

### ④ Coil frost prevention

To prevent indoor coil frost, the compressor will stop when the indoor coil thermistor (RT2) reads 34°F or below after the compressor has been continuously operated for at least 16 minutes or more. When the indoor coil temperature rises to 50°F or above, the compressor will start in a 3-minute(\*2) time delay.

\*2 When the indoor coil temperature is 30°F or less, the compressor starts in 6 minutes.

**NOTE :** By turning OFF the dip switch SW1-3 on indoor controller board, the start temperature of coil frost prevention changes from 34°F to 36°F.

### ⑤ Coil frost protection

When indoor coil temperature becomes 5°F or below, coil frost protection will proceed as follows.

#### <Start condition>

After the compressor has been continuously operated for 3 minutes or more, and the indoor coil temperature has been 5°F or below for 3 minutes, the coil frost protection will start.

#### <Coil frost protection>

Compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again during the first 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of "P6" on the remote controller.

#### <Termination conditions>

Coil frost protection is released when the start condition is not satisfied again during the allowance, or when the COOL mode stops or changes to another mode.

## (2) Indoor fan control

Indoor fan speed depends on the remote controller setting.

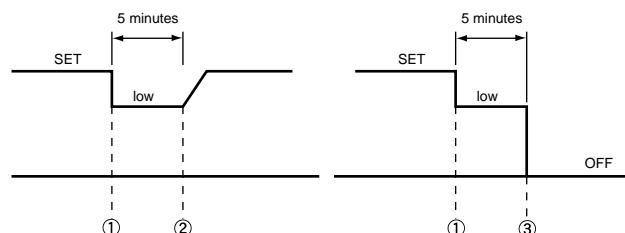
However, if an outdoor unit abnormality is detected, the indoor fan speed will be low, regardless of the remote controller setting.

When the outdoor unit abnormality detection is released and the fan speed returns to the set speed, the quiet cycle control will work.

### (a) Normal control

(i) Fan speed depends on the remote controller setting regardless of the thermostat on/off.

(ii) Fan speed will remain on low if an abnormality in outdoor unit is detected. (5 minutes)



- ① Start-up of outdoor unit abnormality detection.
- ② Release of outdoor unit abnormality detection.
- ③ Unit stop due to outdoor unit abnormality with P8 indication.

**NOTE 1 :** Fan stops immediately if the unit stops or the check mode is started.

### (3) Auto vane control

Auto vane position is set to 10 degrees airflow at the start-up of COOL operation. It can then be changed by the remote controller.

(a) Vane position set mode & swing mode.

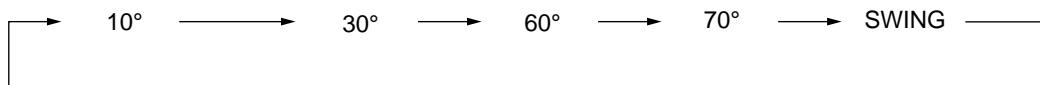
(i) Every time AIR DISCHARGE button is pressed, setting will be changed .

(ii) Airflow direction can be changed with AIR DISCHARGE button.

① Fan speed : LOW



② Fan speed : HIGH



#### <AUTO RETURN>

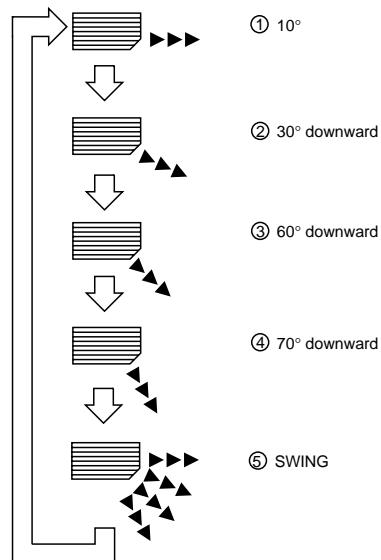
When discharge 60° or 70° continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

After that, 60° or 70° is available by setting with the remote controller, and it continues for 1 hour.

If the discharge direction changes from 60° or 70°, the direction returns to the horizontal discharge when 1 hour has passed since the discharge 60° started.

If the discharge direction changes from 60° (or 70°) to the horizontal discharge, the 1-hour timer to return the horizontal discharge is cancelled.

#### <Remote controller display>



Changes by pressing the AIR DISCHARGE button.

#### (4) Detecting abnormalities in the outdoor unit

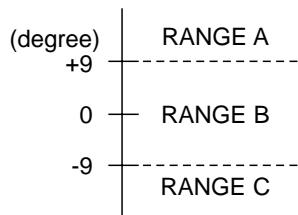
After the compressor has been continuously operated for 3 minutes, if the difference between the indoor coil temperature and room temperature is out of RANGE C for 1 minute, the indoor fan speed will turn to LOW. Five minutes later, if the difference is still out of RANGE C, the outdoor unit is functioning abnormally. Thus, the compressor stops and check code "P8" appears on remote controller.

RANGE A : Indoor coil temperature is more than 9 degrees above room temperature.

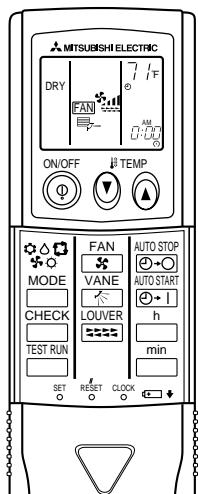
RANGE B : Indoor coil temperature is within 9 degrees either way of room temperature.

RANGE C : Indoor coil temperature is more than 9 degrees below room temperature.

Indoor coil temperature  
minus room temperature



## 2-2 DRY operation



### <How to operate>

① Press POWER ON/OFF button.

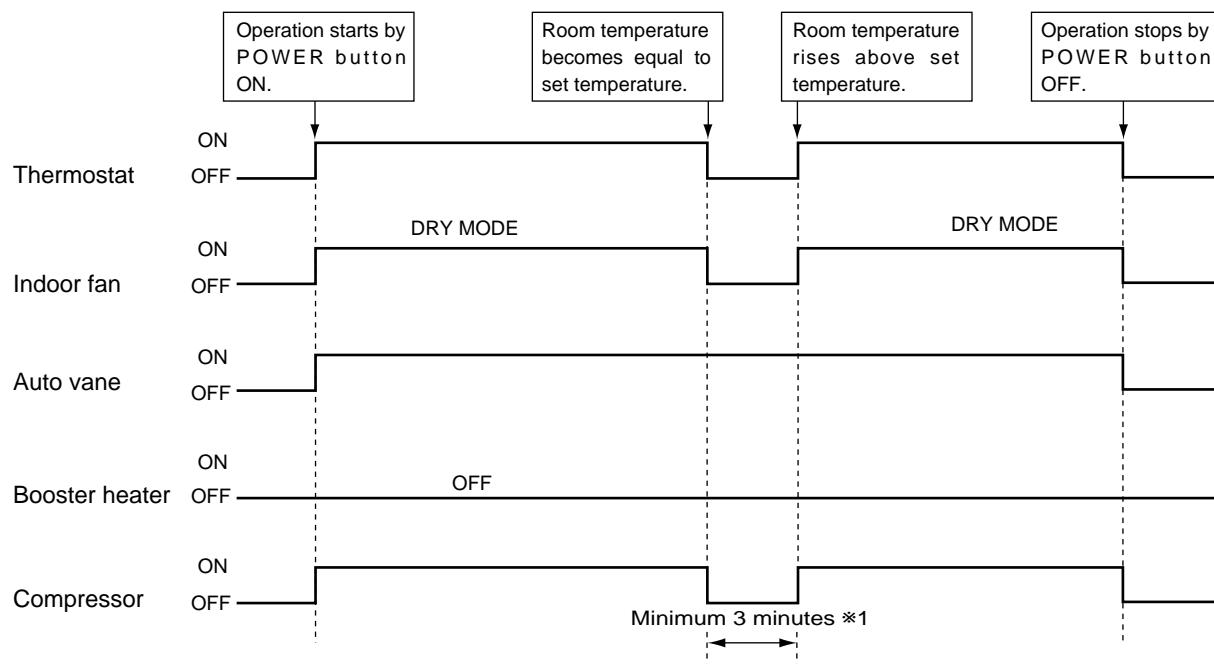
② Press the MODE button to display "DRY"

③ Press the TEMP(↑ or ↓) button to set the desired temperature.

**NOTE:** The set temperature changes 2°F when the TEMP(↑ or ↓) button is pressed one time.

Dry 65 to 87°F

### <DRY operation time chart>



\*1 Even if the room temperature rises above the set temperature during this period, the compressor will not start until this period has ended.

## 1) Compressor control

### ① 3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

### ② The compressor runs when room temperature is higher than set temperature.

The compressor stops when room temperature is equal to or lower than the set temperature.

The compressor maintains the previous state when the room temperature minus the set temperature is 0°F or more, or lower than 2°F.

### ③ The compressor stops in check mode or during protective functions.

### ④ The compressor will not start when the room temperature is 64°F or below.

The compressor starts intermittent operation when the power is turned ON with room temperature above 64°F. The compressor ON/OFF time depends on the thermostat ON/OFF and the following room temperatures. After 3-minute compressor operation,

- If the room temperature thermistor reads above 82°F with thermostat ON, the compressor will operate for 6 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 79°F to 82°F with thermostat ON, the compressor will operate for 4 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads 75°F to 79°F with thermostat ON, the compressor will operate for 2 more minutes and then stop for 3 minutes.
- If the room temperature thermistor reads below 75°F with thermostat ON, the compressor will stop for 3 minutes.
- If the thermostat is OFF regardless of room temperature, the compressor will stop for 10 minutes.

### ⑤ Coil frost protection

Coil frost protection in DRY operation is the same as in COOL operation.

### ⑥ Coil frost prevention

Coil frost prevention does not operate in DRY operation.

## (2) Indoor fan control

The indoor fan runs on LOW speed during compressor operation. The fan speed cannot be changed with the remote controller. Also, the fan runs on LOW speed when the pipe temperature is 43°F or more, or the compressor is OFF and the pipe temperature is below 43°F.

### (a) During compressor OFF

- When the indoor coil temperature is 43°F or above, the indoor fan will stop.
- When the indoor coil temperature is below 43°F, the indoor fan will run on LOW speed.

### (b) During compressor ON

- The indoor fan runs on LOW speed.

### <Dry mode>

The fan notch is controlled by the indoor coil temperature every 30 seconds.

### Fan control in DRY operation.

	Pipe temp.	Fan
Compressor OFF	43°F or more	STOP
	Below 43°F	LOW
Compressor ON	All	LOW

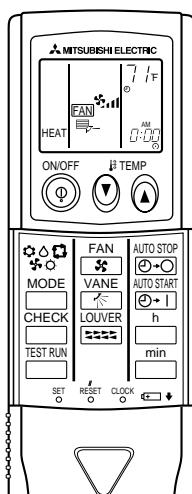
## (3) Auto vane control

Same as in COOL operation

## (4) Detecting abnormalities in the outdoor unit

An abnormality in the outdoor unit can not be detected in DRY operation.

## 2-3 HEAT operation



### <How to operate>

- ① Press POWER ON/OFF button.
- ② Press the MODE button to display "HEAT"
- ③ Press the TEMP(  $\Delta$  or  $\nabla$  ) button to set the desired temperature.

**NOTE:** The set temperature changes 2°F when the TEMP(  $\Delta$  or  $\nabla$  ) button is pressed one time.  
Heating 63 to 83°F.

### <Display in HEAT operation>

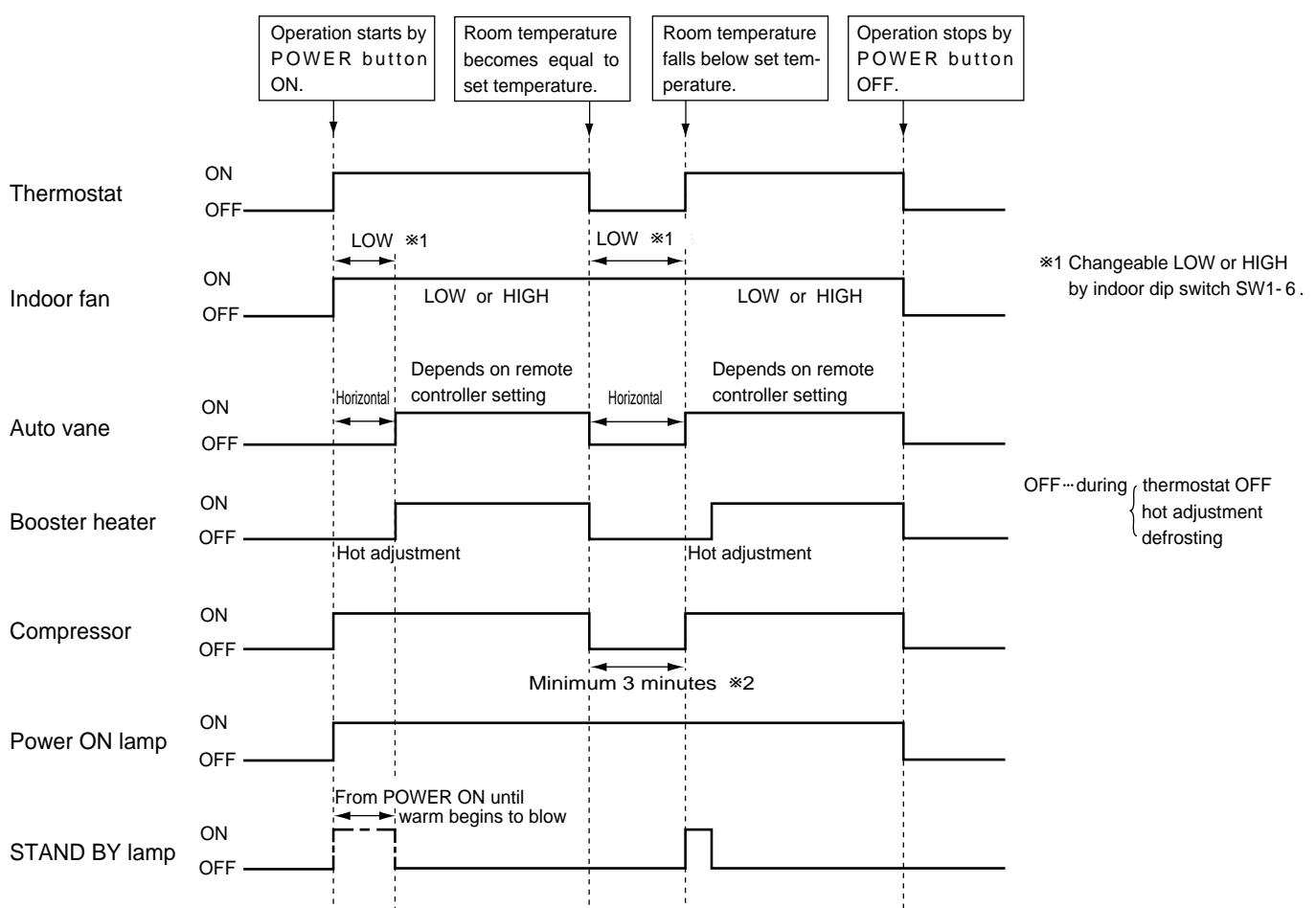
#### [DEFROST]

The [DEFROST] symbol is only displayed during the defrost operation.

#### [STANDBY]

The [STANDBY] symbol is only displayed from the time the heating operation starts until the heated air begins to blow.

### <HEAT operation time chart>



※2 Even if the room temperature falls below the set temperature during this period, the compressor will not start until this period has ended.

## (1) Compressor control

① 3-minute time delay

To prevent overload, the compressor will not start within 3 minutes after stop.

② The compressor runs when the room temperature is lower than the set temperature.

The compressor stops when the room temperature is equal to or higher than the set temperature.

③ The compressor stops in check mode or during protective functions.

④ Overheat protection

<Start condition>

When the indoor coil thermistor reads 158°F or above, the overheat protection will start.

<Overheat protection>

The compressor stops for 6 minutes, and then restarts.

If the start condition is satisfied again within 10 minutes of compressor operation, both the indoor and outdoor units stop, displaying a check code of "P6" on the remote controller.

<Termination conditions>

Overheat protection is terminated when the start condition is not satisfied again during the allowance (10-minute compressor operation), when operation mode changes to other mode, or when thermostat turns OFF.

## (2) Indoor fan control

(a) Normal control

(i) The indoor fan runs on LOW speed during the thermostat OFF.

LOW speed can be changed to HIGH speed by setting the dip switch SW1-6.

If the indoor coil temperature becomes more than 5 degrees below the room temperature during the thermostat OFF, the indoor fan will stop. After, when the indoor coil temperature becomes within 5 degrees of room temperature, the indoor fan will run on LOW speed.

(ii) Hot adjustment

Hot adjustment is a warm-up for HEAT operation

<Start conditions>

The hot adjustment works under any of the following conditions.

● HEAT operation starts.

● Defrosting ends.

● Thermostat turns ON.

[Hot adjustment]

Initially, the indoor fan runs on LOW speed. When 5 minutes have passed or the indoor coil temperature exceeds 95°F, the fan speed will not be changed. 2 minutes later, the hot adjustment ends. Then, the fan speed depends on the remote controller setting.

(iii) The indoor fan stops when the indoor coil temperature is within 9 degrees either way of room temperature.

(iv) To eliminate the remaining heat, the indoor fan runs for the first 1 minute after the booster heater is turned OFF.

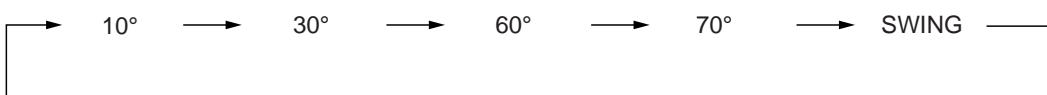
## (3) Auto vane control

Auto vane position is set to 70 degrees airflow at the start-up of HEAT operation.

(a) Vane position set mode & swing mode.

(i) Every time AIR DISCHARGE button is pressed, setting will be changed.

(ii) Airflow direction can be changed with AIR DISCHARGE button.



NOTE : In the following cases, the discharge direction is 30° regardless of the remote controller setting.

① During the hot adjustment with fan speed at LOW

② During defrosting with indoor fan OFF

③ During thermostat OFF

## (4) Booster heater control

When the room temperature is 6 degrees below the set temperature, the booster heater will turn ON.

When the room temperature is equal to the set temperature, booster heater will turn OFF.

During the hot adjustment, the booster heater will not work.

<Overheat prevention>

When the indoor coil thermistor rises to 140°F or above, the booster heater cannot work.

When the indoor coil thermistor falls to 131°F or below, the booster heater can work.

## (5) Detecting abnormalities in the outdoor unit

When the outdoor unit is determined to be abnormal by the following causes, the compressor will stop and the check code "P8" will appear on the remote controller display.

( i ) During compressor ON while hot adjustment is set.

- ① If the difference between the indoor coil temperature and room temperature is in the RANGE B, the indoor fan will stop.
- ② Within 20 minutes after entering RANGE B (except for the first 10 seconds),
  - a) If the temperature difference enters RANGE A, the hot adjustment starts,
  - b) If the temperature difference is still in RANGE B, the outdoor unit is deemed abnormal.
  - c) If the temperature difference enters RANGE C, defrosting starts.
- ③ Within 20 minutes after entering RANGE C, if the temperature difference does not return to RANGE B, the outdoor unit is deemed abnormal.
- ④ If the temperature difference returns to RANGE B, the next 20 minutes is an allowance period. If the difference enters RANGE A during the allowance, defrosting ends and the hot adjustment starts. If the difference does not enter RANGE A during the allowance, the outdoor unit is deemed abnormal.

( ii ) During compressor ON in defrosting

After 30 minutes of defrosting in hot adjustment, if the temperature difference is still in RANGE C, the outdoor unit is determined to be abnormal.

When RANGE B does not change to RANGE A after 20 minutes have passed since RANGE C had outdoor unit is determined to be abnormal.

( iii ) During compressor OFF

Not detecting abnormalities.

## (6) Indoor coil temperature abnormality detection

An abnormality can be detected during compressor ON, except for the following.

- For the first 30 minutes after the temperature difference between the indoor coil temperature and room temperature enters the RANGE C.
- When the temperature difference enters the RANGE C until it moves to the RANGE B.

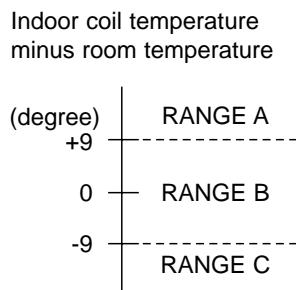
## (7) Defrosting operation

After the outdoor unit starts the defrosting operation, when the temperature difference between the indoor coil temperature and room temperature gets out of RANGE A and into RANGE B, the indoor unit starts the defrosting mode. After the outdoor unit stops the defrosting operation, when the temperature difference returns to the RANGE A, the indoor unit stops the defrosting mode. While the indoor unit is in the defrosting mode, the indoor fan and the booster heater stop.

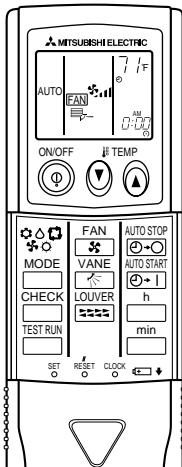
\*1 RANGE A : Indoor coil temperature is more than 9 degrees above room temperature.

RANGE B : Indoor coil temperature is within 9 degrees either way of room temperature.

RANGE C : Indoor coil temperature is more than 9 degrees below room temperature



## 2-4 AUTO operation (Automatic COOL/HEAT change over operation)



### <How to operate>

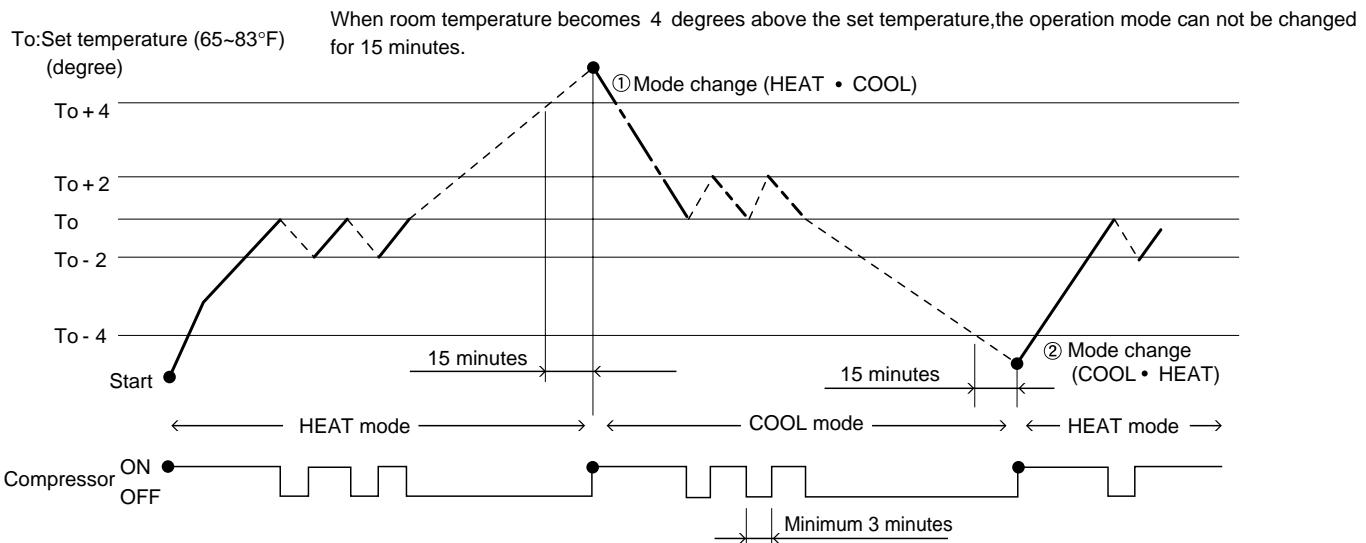
- ① Press POWER ON/OFF button.
  - ② Press the MODE button to display "AUTO"
  - ③ Press the TEMP(Ⓐ or Ⓣ) button to set the desired temperature.
- NOTE:** The set temperature changes 2°F when the TEMP(Ⓐ or Ⓣ) button is pressed one time.  
Automatic 65 to 83°F.  
●“AUTOMATIC” works to change by itself the operation mode either to cooling or heating according to the room temperature.

### (1) Initial mode

- ① When AUTO operation starts after unit OFF.
  - If the room temperature is higher than the set temperature, operation starts in COOL mode.
  - If the room temperature is equal to or lower than the set temperature, operation starts HEAT mode.
- ② When AUTO operation starts after COOL or HEAT operation, the previous mode continues.

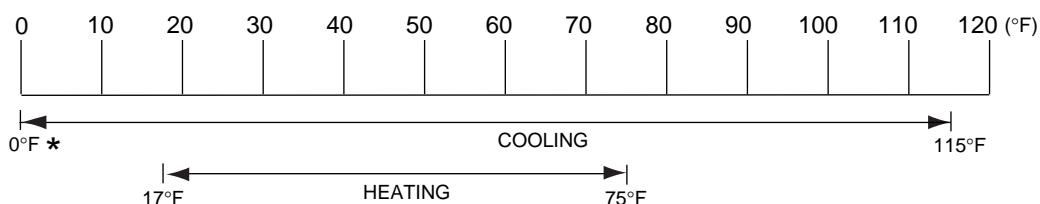
### (2) Mode change

- ① HEAT mode changes to COOL mode when 15 minutes have passed since the room temperature became 4 degrees above the set temperature.
- ② COOL mode changes to HEAT mode when 15 minutes have passed since the room temperature became 4 degrees below the set temperature.



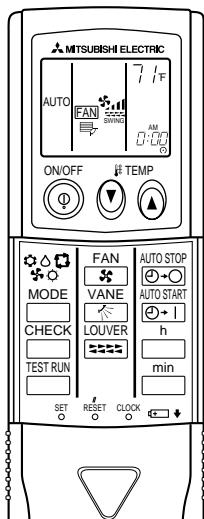
### (3) Temperature range

AUTO operation is available under the outside air temperatures as follows.



\* In case of the wind baffle installed.

## 2-5 Auto vane control

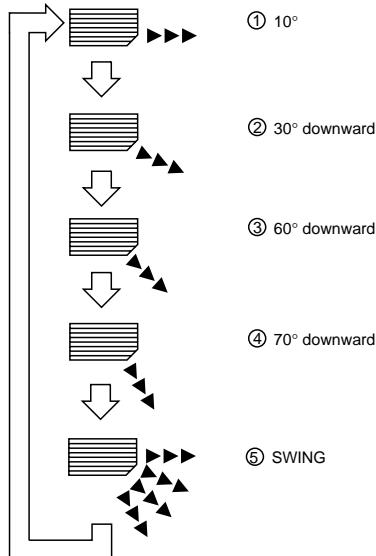


### <How to operate>

To change the air flow direction, press VANE (VENT) button.

①	②	③	④	⑤
10°	30°	60°	70°	SWING

### <Remote controller display>



Available in COOL operation with fan speed on HIGH or in HEAT operation.  
Unavailable in DRY operation.  
If fan speed changes from LOW to HIGH during 30° downward discharge in COOL mode, the direction automatically changes to 10°.

Changes by pressing the AIR DISCHARGE button.

### (1) COOL/DRY operation

At the start-up of COOL or DRY operation, the discharge direction is automatically set to 10°. After, it can be changed to another direction with VANE (VENT) button on the remote controller.

#### <Auto return>

When discharge 60° or 70° continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

After that, 60° or 70° is available by setting with the remote controller, and it continues for 1 hour.

If the discharge direction changes from 60° or 70°, the direction returns to the horizontal discharge when 1 hour has passed since the discharge 60° started.

If the discharge direction changes from 60° (or 70°) to the horizontal discharge, the 1-hour timer to return the horizontal discharge is cancelled.

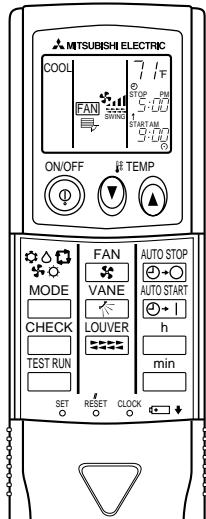
### (2) HEAT operation

At the start-up of HEAT operation, discharge direction depends on the setting of the last operation.

After, it can be changed to another direction with VANE (VENT) button. The discharge direction shifts to 10° regardless of the remote controller settings under any of the following conditions.

- Thermostat OFF
- Defrosting
- Indoor fan speed LOW in hot adjustment

## 2-6 TIMER operation



### <Timer function>

AUTO STOP .....The air conditioner stops after the set time lapses.

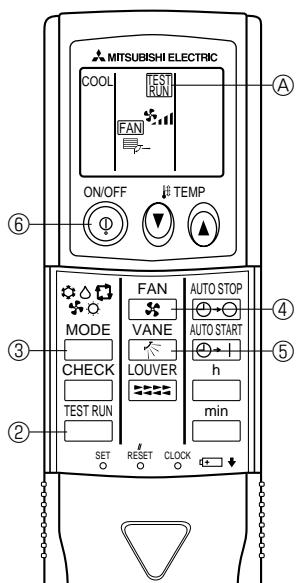
AUTO START .....The air conditioner starts after the set time lapses.

AUTO OFF .....Timer is not active.

### <How to operate>

- ① Push POWER ON/OFF button.
- ② Check if or not the current time is correct.
- ③ Push the  $\textcircled{D} \rightarrow \textcircled{O}$  or  $\textcircled{D} \rightarrow \textcircled{I}$  button and select the desired time.
- ④ Set the timer time using HR and MIN buttons.

## 2-7 Test run



### Test run

Measure an impedance between the power supply terminal block on the outdoor unit and ground with a 500V Megger and check that it is equal to or greater than 1.0MΩ.

- ① Turn on the main power to the unit.
- ② Press the TEST RUN button twice continuously.  
(Start this operation from the status of remote controller display turned off.)  
Ⓐ TEST RUN and current operation mode are displayed.
- ③ Press the MODE button ( $\textcircled{\text{A}} \textcircled{\text{B}} \textcircled{\text{C}} \textcircled{\text{D}}$ ) to activate COOL mode, then check whether cool air is blown out from the unit.
- ④ Press the FAN button and check whether strong air is blown out from the unit.
- ⑤ Press the VANE button and check whether the auto vane operates properly.
- ⑥ Press the ON/OFF button to stop the test run.

#### Note:

- Point the remote controller towards the indoor unit receiver while following steps ② to ⑥.
- It is not possible to run the in FAN, DRY or AUTO mode.

(1) Indoor coil temperature code

During the test run, the indoor coil temperature code from 1 to 15 is displayed on the remote controller instead of room temperature. The code should fall with the lapse of time in normal COOL operation, and should rise in normal HEAT operation.

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	~34(36)°F	36(37)°F~50°F	~59°F	~68°F	~77°F	~86°F	~95°F	~104°F
Code	9	10	11	12	13	14	15	
Indoor coil temperature	~113°F	~122°F	~131°F	~140°F	~158°F	~191°F		Thermistor abnormality

(2) Trouble during test run

- If the unit malfunctions during the test run, refer to section 10 in this manual entitled "TROUBLESHOOTING."
- When the optional program timer is connected to the conditioner, refer to its operating instructions.

## 2-8 Emergency operation

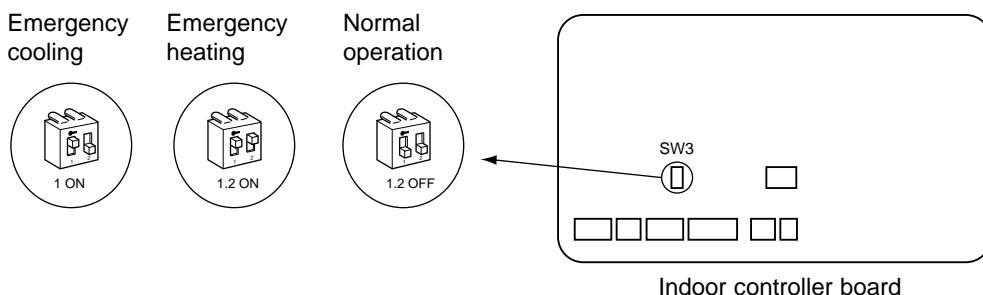
When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is started by setting the dip switch SW3 on the indoor controller board.

### <Before emergency operation>

1. Make sure the compressor and the indoor fan are operating normally.
2. Locate the defect with the self-diagnostic function. When the self-diagnostic function indicates "protective function is working", release the protective function before starting the emergency operation.  
CAUTION: When the self-diagnostic function indicates a check code of "P5" (drain pump malfunction), do not start the emergency operation because the drain may overflow.

### <How to operate>

1. For emergency cooling, set the dip switch SW3-1 to ON and SW3-2 to OFF.  
For emergency heating, set the dip switch SW3-1,2 to ON.



2. Turn ON the outdoor unit breaker and then ON the indoor unit breaker.  
Emergency operation will now start.
3. During emergency operation, the indoor fan operates on high speed, the auto vanes do not operate.
4. To stop emergency operation, turn OFF the indoor unit breaker.
5. Movements of the vanes do not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

NOTE: The remote controller POWER ON/OFF button can not start/stop emergency operations.

CAUTION: Do not use emergency cooling for more than 10 hours, as the indoor coil may freeze.

## 2-9 Dip switch and jumper connector functions.

Each figure shows the initial factory setting.

### 2-9-1 On remote controller board

#### (1). On indoor controller board

##### 1. SW1 (Mode selector)

	1	2	3	4	5	6	7	8	9	10
ON										
OFF										

SW1-1) Switch that changes between FAN mode and AUTO mode

OFF:AUTO mode for models with heat pump

ON:Fan mode for models without heat pump

SW1-2) Switch for drain pump

OFF:The drain pump works in COOL and DRY operation.

ON:The drain pump works in both COOL and DRY and HEAT operation.

SW1-3) Switch to change the temperature to start coil frost prevention

OFF:34°F

ON:36°F

SW1-4) Switch for set temperature adjustment in HEAT mode

During HEAT operation,warm air collects near the ceiling.When the indoor unit is installed near the ceiling,the temperature read by room temperature thermistor differs from the actual living-space temperature by about 7 degrees. Therefore,the room temperature read by room temperature thermistor must be lowered by 7 degrees.

OFF:7-degree adjustment

ON:NO adjustment

SW1-5) Not for use.

SW1-6) Switch for fan speed during thermostat OFF in HEAT operation

OFF:LOW

ON:LOW or HIGH(set with remote controller)

SW1-7) Switch for detecting abnormalities in the outdoor unit abnormality detection

OFF:When an abnormality occurs,it is detected.

ON:Even if an abnormality occurs,it can not be detected.

SW1-8) Switch for auto restart function

OFF:This function does not work

ON:This function works.

SW1-9, 10) Not for use.

##### 2. SW2 (Address selector)

	1	2	3	4	5	6
ON						
OFF						

SW2-1~6) Not for use.

##### 3. SW3 (Emergency operation switch)

Normal operation	For emergency cooling	For emergency heating
ON	1 2	1 2
OFF	ON    OFF	ON    OFF

##### 4. SW5 (Model selector)

	1	2	3	4
ON				
OFF				

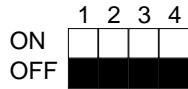
SW5-1) Not for use.

SW5-2) Leave this switch as it is.

SW5-3) Not for use.

SW5-4) Not for use.

5. SW6 (Address selector)



This switch is not available for series PKH.

6. SW7 (Model selector)

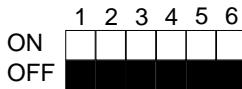
Switch to set the output of phase-controlled indoor fan motor.

Address setting is available at any time.

The initial factory setting by is based on each capacity.

Service Ref.	PKH18FL	PKH24FL	PKH30FL	PKH36FL
SW7	ON  OFF  1 2 3			

7. SW8 (Option)



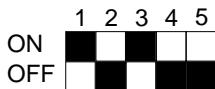
SW8-1~2) Not for use.

SW8-3~4) Not for use.

SW8-5) Not for use.

SW8-6) OFF:For 230V power supply  
ON: For 208V power supply

8. SW9 (Model selector)



SW9-1~5) Keep this switch.

## 2-10 INDOOR FAN CONTROL

Indoor fan relay output.

(a) During fan ON

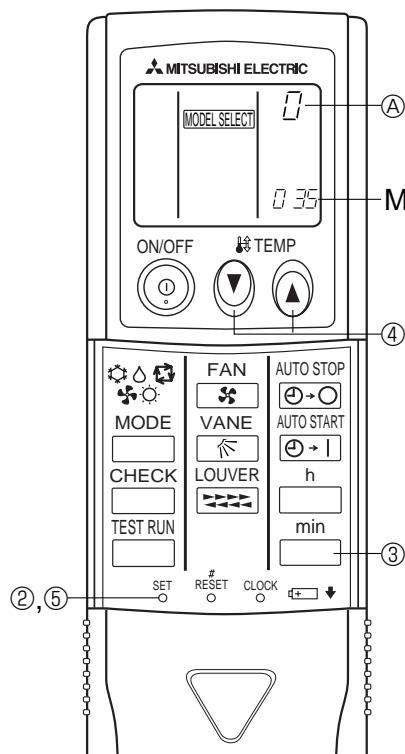
The indoor fan relay turns ON. One second later, the phase control will start.

(b) During fan OFF

The phase control turns OFF. One second later, the indoor fan relay will turn OFF.

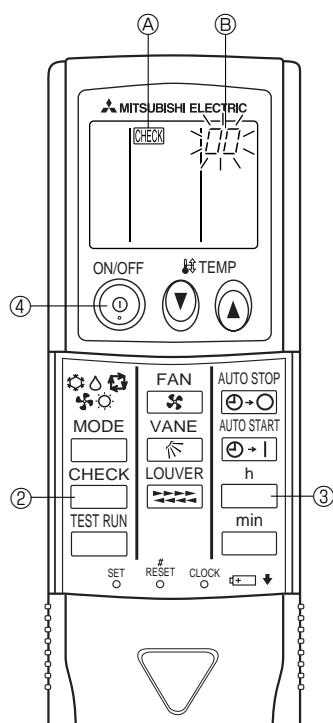
## 2-11 Wireless remote controller pair number setting operation

- ① Turn on the main power to the unit.
- ② Press the SET button with the point of a ball-point pen or the like.  
Start this operation from the status of remote controller display turned off.  
**MODEL SELECT** blinks and Model No. is lighted.
- ③ Press the **□** button twice continuously.  
Ⓐ Pair No. "0" blinks.
- ④ Press the temp **▼** Ⓐ button to set the pair number you want to set.
- ⑤ Press the SET button with the point of a ball-point pen or the like.  
Set pair number is lighted for three seconds then turned off.



Ⓐ Pair No. of wireless remote controller	Indoor PC board
0	Factory setting
1	Cut J41
2	Cut J42
3~9	Cut J41, J42

## 1. Self-diagnostic function

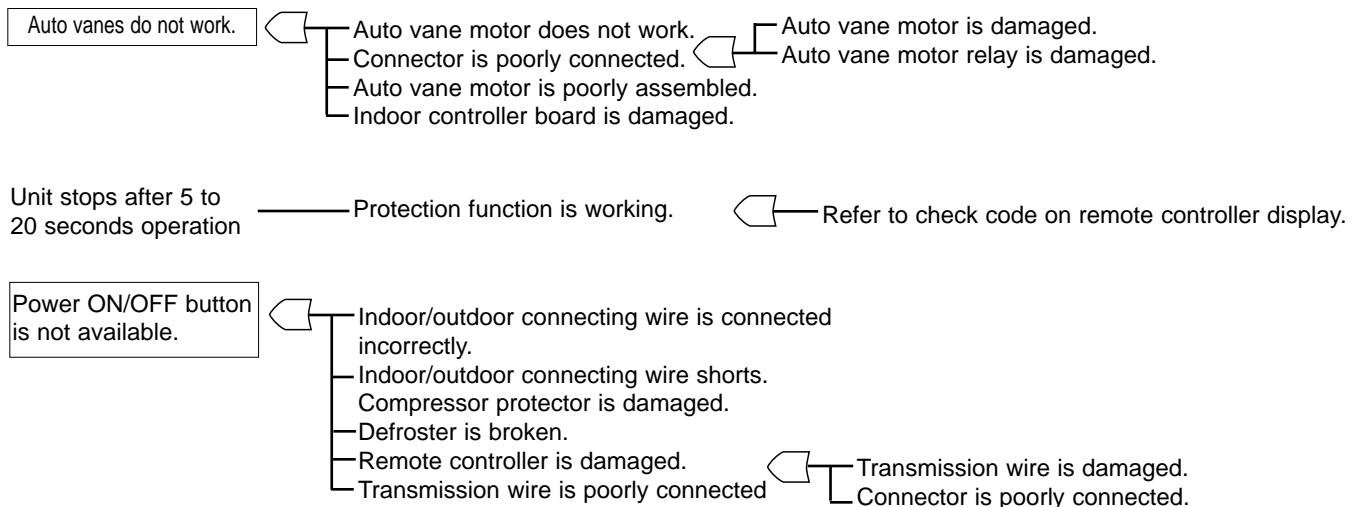


### Self-check

- ① Turn on the main power to the unit.
- ② Press the **CHECK** button twice continuously.  
(Start this operation from the status of remote controller display turned off.)  
Ⓐ **CHECK** begins to light.  
Ⓑ "00" begins to blink.
- ③ While pointing the remote controller toward the unit's receiver, press the **h** button. The check code will be indicated by the number of times that the buzzer sounds from the receiver section and the number of blinks of the operation lamp.
- ④ Press the ON/OFF button to stop the self-check.

Check Code	Alarm	Buzzer sound
1	Suction sensor alarm	Single beep × 1
2	Pipe sensor alarm	Single beep × 2
3	Transmission alarm	Single beep × 3
4	Drain sensor alarm	Single beep × 4
5	Drain pump alarm	Single beep × 5
6	Anti-freezing on	Single beep × 6
	Anti-overheat on	Single beep × 6
7	System error	Single beep × 7
8	Outdoor unit alarm	Single beep × 8
9	No alarm (no error)	Receiving signal only (no error alarm)

## 2. OTHER TROUBLES AND CAUSES



Check code	Diagnosis of malfunction	Cause	Check points
1	Abnormality of room temperature thermistor (RT1)	1) Bad contact of thermistor 2) Damaged thermistor	1) Check the thermistor. 2) Measure the resistance of the thermistor. Normal resistance should be as follows. 32°F.....15kΩ    86°F.....4.3kΩ 50°F.....9.6kΩ    104°F.....3.0kΩ 68°F.....6.3kΩ If the resistance is normal, replace the indoor controller board.
2	Abnormality of indoor coil thermistor (RT2)		
4	Abnormality of drain sensor	1) Bad contact of transmission wire 2) Damaged thermistor	1) Check the connector. 2) Measure the resistance of the thermistor (between ④ - ⑤ of CN50). As for the normal resistance, refer to the case of 1. If the resistance is normal, replace the indoor controller board.
5	Malfunction of drain pump	1) Malfunction of drain pump 2) Damaged drain sensor	1) Check the drain pump. 2) ● Check the drain sensor. ● Check the drain sensor heater. Normal resistance should be 82Ω. (between ① - ③ of CN50). If the resistance is normal, replace the indoor controller board.
6	Coil frost protection is working.	1) Short cycle of air cycle 2) Dirty air filter 3) Damaged fan 4) Abnormal refrigerant	1) Clear obstructions from the air cycle. 2) Clean the air filter 3) Check the fan. 4) Check the refrigerant temperature.
8	Abnormality in outdoor unit	1) Wrong wiring of indoor/outdoor connecting wire 2) Reversed phase 3) Protection device is working 4) Damaged outdoor coil thermistor	1) Check the indoor/outdoor connecting wire. 2) Change the connection of electric wiring. 3) Check the protection device. 4) Measure the resistance of the outdoor coil thermistor. If the resistance is normal, replace the outdoor controller board.

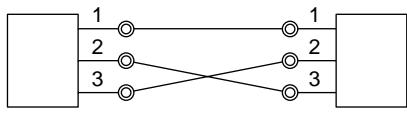
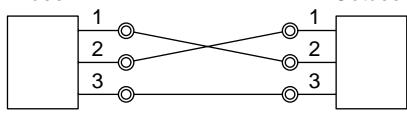
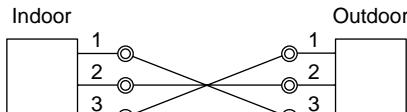
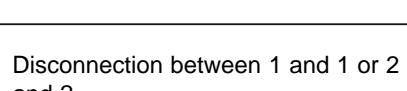
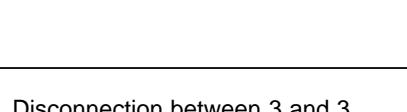
\* The number of check code shows times of Buzzer sound.

### 3. WRONG WIRING ON SITE

#### 3-1 Between remote controller and indoor unit

If the wire is disconnected between the remote controller and the indoor unit, nothing is displayed on the remote controller when the POWER button is pressed. The beep sound will also not be heard.

#### 3-2 Phenomenon due to wrong wiring between indoor and outdoor units

Wrong wiring	Mode	Thermostat	Phenomenon
	COOL	OFF	Operation stops.
		ON	4-Way valve turns ON. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Cooling operation. Several minutes later, check code "P8" appears on remote controller display.
		ON	Normal operation until first thermostat OFF.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.
	COOL	OFF	Outdoor unit stops.
		ON	Operation stops. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.
	COOL	OFF	Operation stops.
		ON	Operation stops. 9 minutes later, check code "P8" appears on remote controller display.
	HEAT	OFF	Operation stops.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.
	COOL	—	Normal operation.
		OFF	Operation stops. 4-way valve turns OFF.
	HEAT	ON	27 minutes later, check code "P8" appears on remote controller display.
		ON	Operation stops. 27 minutes later, check code "P8" appears on remote controller display.

## 4. HOW TO CHECK THE PARTS

Parts name	Check points		
Room temperature thermistor (RT1) Pipe temperature thermistor (RT2)	Disconnect the connector, then measure the resistance using a tester. (Surrounding temperature 50°F to 86°F)		
	Normal 4.3kΩ to 9.6kΩ	Abnormal Open or short	(Refer to the thermistor)
Fan motor (MF)	Measure the resistance between the terminals using a tester.		
	Motor terminal or Relay connector	Normal PKH 18,24FL Red-White White-Black	Abnormal Open or short
	Protector	18,24FL 30,36FL 99.5Ω±10% 62.6Ω±10% 103.5Ω±10% 74.0Ω±10%	
Vane motor (MV)	Measure the resistance between the terminals using a tester. (Surrounding temperature 68°F to 86°F)		
	Normal 186 to 214Ω	Abnormal Open or short	
	Brown-Yellow Brown-Blue Red-Orange Red-Pink		

<Thermistor Characteristic graph>

Thermistor for lower temperature

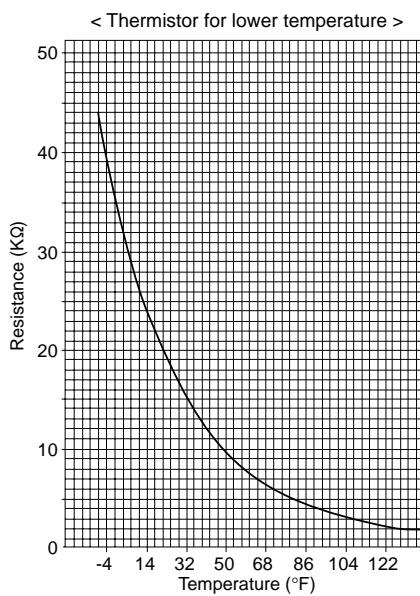
Room temperature thermistor(RT1)  
Pipe temperature thermistor(RT2)

Thermistor  $R_0=15\text{k}\Omega \pm 3\%$

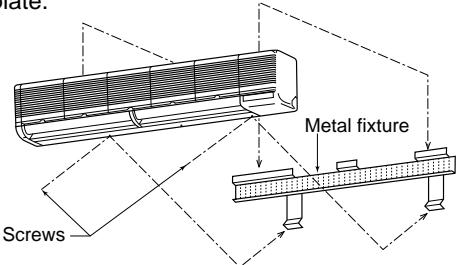
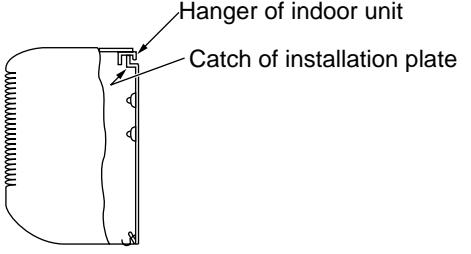
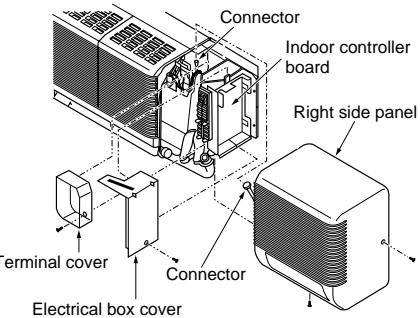
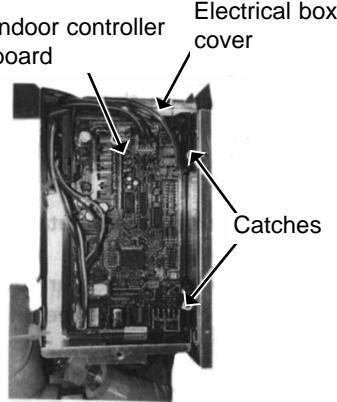
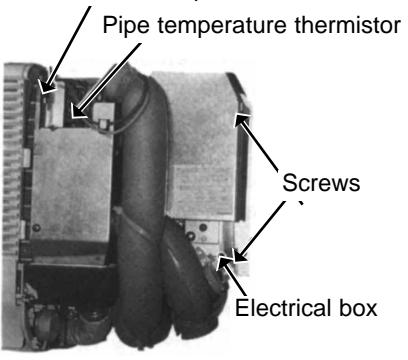
Fixed number of  $B=3480\text{k}\Omega \pm 2\%$

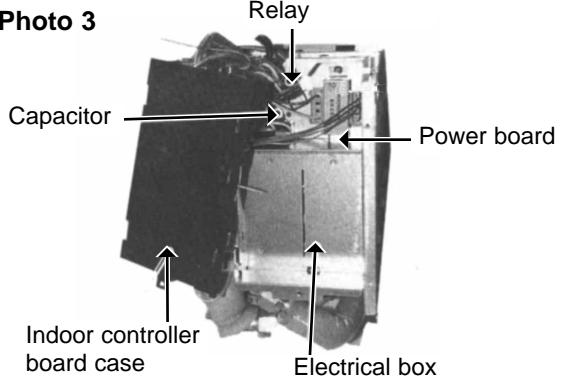
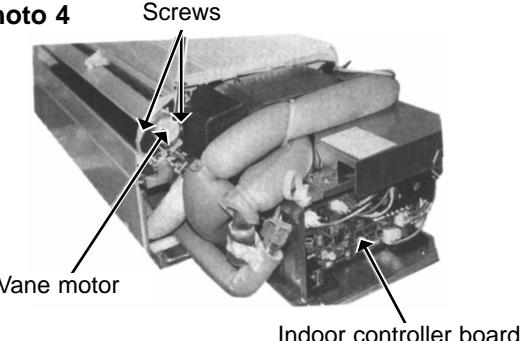
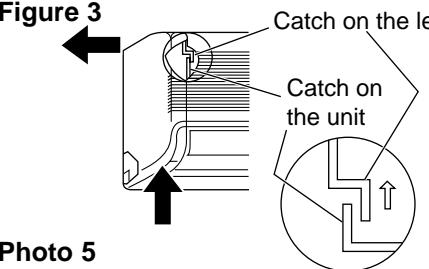
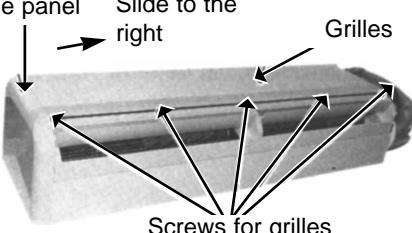
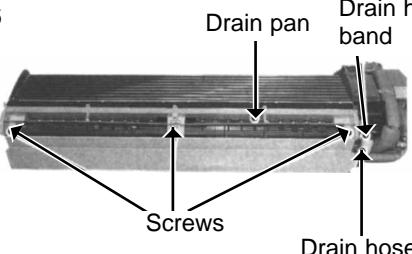
$$R_t=15\exp\left\{\frac{1}{273+t}-\frac{1}{273}\right\}$$

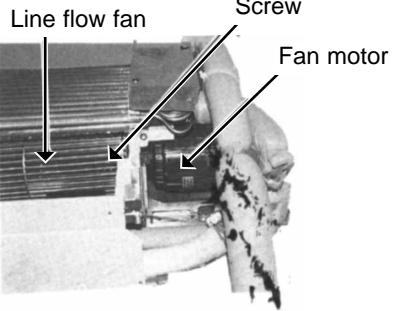
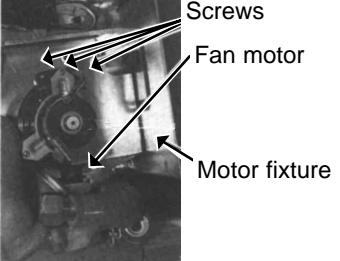
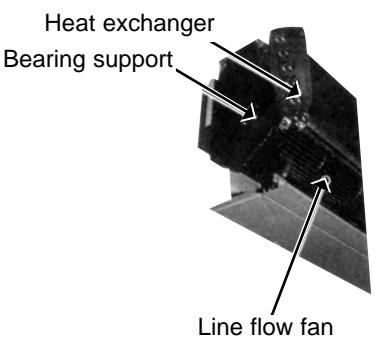
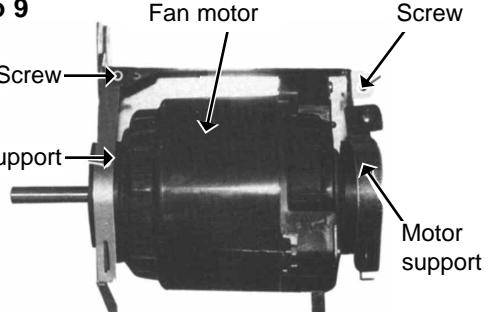
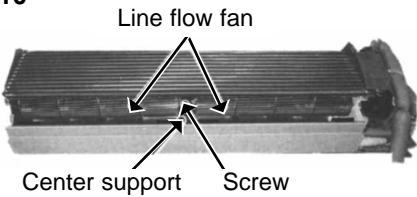
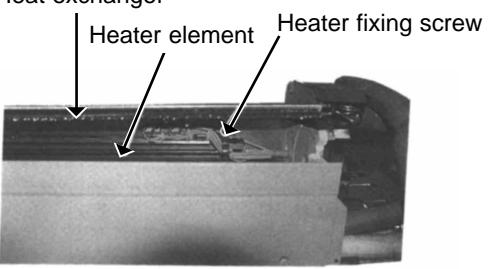
32°F	15kΩ
50°F	9.6kΩ
68°F	6.3kΩ
77°F	5.4kΩ
86°F	4.3kΩ
104°F	3.0kΩ



## Indoor unit PKH24FL

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
<p><b>1. Removing the lower side of the indoor unit from the installation plate</b></p> <p>(1) Remove the 2 screws. Hang the indoor unit hangers to the catches on the installation plate.</p> 	<p><b>Figure 1</b></p> 
<p><b>2. Removing the right side panel</b></p> <p>(1) Remove the 2 screws of the right side panel: one on the bottom and the other on the upper right-hand side. (2) Disconnect the connector from the adapter case. (3) Sliding the right side panel to the right, pull it out toward you.</p>	<p><b>Figure 2</b></p> 
<p><b>3. Removing the indoor controller board</b></p> <p>(1) Remove the right side panel. (2) Remove the screw of the electrical box cover, and remove the cover. (3) Disconnect the connectors on the indoor controller board. (4) To unhook the catches on the right-hand side of the indoor controller board, pull the left-hand side toward you and lift up the cover to the right. Then the indoor controller board can be removed.</p>	<p><b>Photo 1</b></p> 
<p><b>4. Removing the electrical box</b></p> <p>(1) Remove the right side panel. (2) Remove the screw of the electrical box cover, and remove the cover. (3) Remove the room temperature thermistor and the pipe temperature thermistor. (4) Disconnect the vane motor connector on the indoor controller board. (5) Remove the 2 screws of the electrical box. (6) Disconnect the connector of the heater lead wire connector. (7) Disconnect the connector of the fan motor lead wire. (8) Remove the electrical box.</p>	<p><b>Photo 2</b></p> 

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
<p>(8) Remove the screws of the indoor controller board case, and pull out the indoor controller board case. Then the transformer and the capacitor and relay can be serviced.</p>	<p><b>Photo 3</b></p> 
<p><b>5. Removing the vane motor</b></p> <ol style="list-style-type: none"> <li>(1) Remove the right side panel.</li> <li>(2) Remove the screw of the electrical box cover, and remove the cover.</li> <li>(3) Remove the 2 screws of the vane motor, and remove the motor from the shaft.</li> <li>(4) Disconnect the vane motor connector on the indoor controller board.</li> </ol>	<p><b>Photo 4</b></p> 
<p><b>6 Removing the intake grilles</b></p> <ol style="list-style-type: none"> <li>(1) Remove the right side panel.</li> <li>(2) To remove the left side panel, remove the screw on the bottom and the screw on the upper left-hand side. (See Figure 3.)</li> <li>1. Press up this side of the left side panel to unhook the catch on the panel from the catch on the unit.</li> <li>2. Slide the left side panel to the left to remove the panel.</li> </ol> <p>Note: Fix the unit to the metal fixture securely</p> <ol style="list-style-type: none"> <li>(3) Remove the air filters.</li> <li>(4) Hold and press the center cover to remove.</li> <li>(5) Remove the screws of the grilles.</li> <li>(6) Pull the lower side of the grille toward you and slide the upper to the right to remove the grilles.</li> </ol>	<p><b>Figure 3</b></p>  <p><b>Photo 5</b></p> 
<p><b>7. Removing the drain pan</b></p> <ol style="list-style-type: none"> <li>(1) Remove the left and right side panels.</li> <li>(2) Remove the grilles.</li> <li>(3) Remove the electrical box cover.</li> <li>(4) Loosen the drain hose band to remove.</li> <li>(5) Remove the 3 screws of the drain pan, and slide the drain pan toward you to remove.</li> </ol>	<p><b>Photo 6</b></p> 

OPERATING PROCEDURE	PHOTOS
<p><b>8. Removing the line flow fan and the fan motor</b></p> <ol style="list-style-type: none"> <li>(1) Remove the left and right side panels.</li> <li>(2) Remove the grilles.</li> <li>(3) Remove the electrical box.</li> <li>(4) Remove the drain pan.</li> <li>(5) Loosen the screw that fixes the line flow fan to the fan motor. (See Photo 7.)</li> <li>(6) Remove the 4 screws of the motor fixture, and remove the fan motor and the motor fixture at a time (See Photo 8.)</li> <li>(7) Remove the screws of the left and right motor supports, and remove the motor supports and the fan motor. (See Photo 9.)</li> <li>(8) Remove the 2 screws on the left and right sides of the heat exchanger, and pull the bearing support toward you. (See Photo 11.)</li> <li>(9) Remove the screw of the center support, and remove the support. (See Photo 10.)</li> <li>(10) Pull the left-hand side of the heat exchanger toward you, and remove the line flow fan.</li> </ol>	<p><b>Photo 7</b></p>  <p><b>Photo 8</b></p> 
<p><b>Photo 11</b></p> 	<p><b>Photo 9</b></p> 
<p><b>9. Removing the electrical heater.</b></p> <ol style="list-style-type: none"> <li>(1) Remove the left and right side panels.</li> <li>(2) Remove the grilles.</li> <li>(3) Remove the drain pan.</li> <li>(4) Loosen the screw that fixes the line flow fan to the fan motor. (See Photo 7.)</li> <li>(5) Remove the screw of the center support, and remove the support. (See Photo 10.)</li> <li>(6) Remove the 2 screws on the left and right sides of the heat exchanger, and pull the bearing support toward you. (See Photo 11.)</li> <li>(7) Pull the left-hand side of the heat exchanger toward you, and remove the line flow fan.</li> <li>(8) Remove the heater fixing screws (1 screw each on right and left sides), and slide the heater element to the left to remove the heater.</li> </ol>	<p><b>Photo 10</b></p>  <p><b>Photo 12</b></p> 

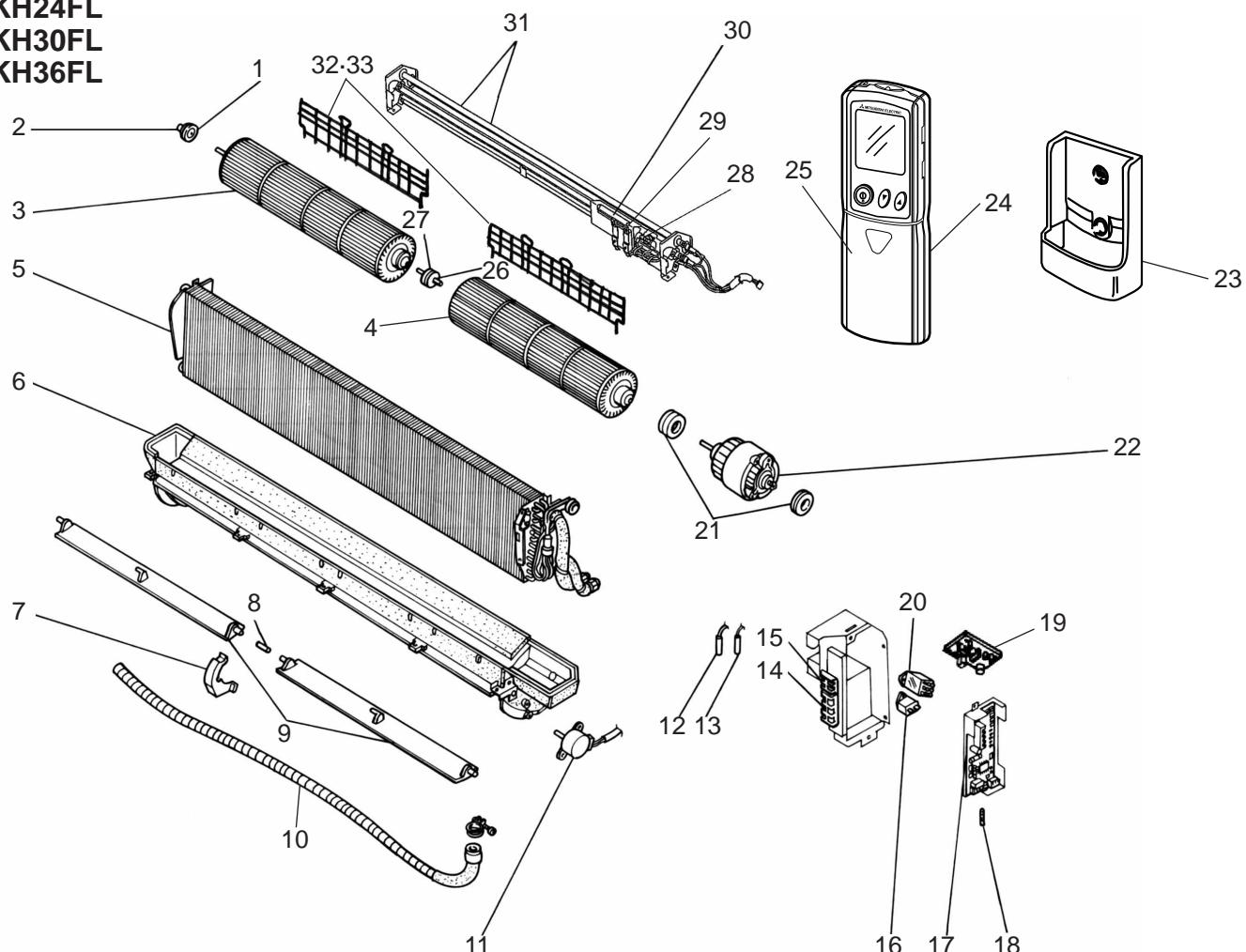
## ELECTRICAL PARTS

PKH18FL

PKH24FL

PKH30FL

PKH36FL



No.	Parts No.	Parts Name	Specifications	Q'ty / set				Remarks (Drawing No.)	Wiring Diagram Symbol		
				PKH							
				18	24	30	36				
				FL	FL	FL	FL				
1	R01 005 103	SLEEVE BEARING		1	1	1	1				
2	R01 Z61 102	BEARING MOUNT		1	1	1	1				
3	R01 12G 114	LEFT LINE FLOW FAN		1	1						
	R01 16G 114	LEFT LINE FLOW FAN				1	1				
4	R01 12G 115	RIGHT LINE FLOW FAN		1	1						
	R01 16G 115	RIGHT LINE FLOW FAN				1	1				
※ 5	T7W B08 480	HEAT EXCHANGER	Including Restrictor valve • Capillary tube	1							
	T7W B02 480	HEAT EXCHANGER	Including Restrictor valve • Capillary tube		1						
	T7W B09 480	HEAT EXCHANGER	Including Restrictor valve • Capillary tube			1					
	T7W B03 480	HEAT EXCHANGER	Including Restrictor valve • Capillary tube				1				

\* Restrictor valve and capillary tube have been added to "Specifications" of heat exchanger.

No.	Parts No.	Parts Name	Specifications	Q'ty / set				Remarks (Drawing No.)	Wiring Diagram Symbol		
				PKH							
				18 FL	24 FL	30 FL	36 FL				
6	T7W E13 529	DRAIN PAN		1	1						
	T7W E14 529	DRAIN PAN				1	1				
7	R01 12G 621	CENTER COVER		1	1	1	1				
8	R01 12G 063	JOINT SHAFT		1	1	1	1				
9	R01 12G 002	AUTO VANE		2	2						
	R01 16G 002	AUTO VANE				2	2				
10	R01 KV5 527	DRAIN HOSE		1	1	1	1				
11	R01 12G 223	VANE MOTOR		1	1	1	1		MV		
12	T7W E12 202	ROOM TEMPERATURE THERMISTOR	ROOM TEMPERATURE	1	1	1	1		RT1		
13	R01 E02 202	PIPE TEMPERATURE THERMISTOR	PIPE TEMPERATURE (INDOOR COIL)	1	1	1	1		RT2		
14	R01 377 246	TERMINAL BLOCK	3P(L1, L2, GR)	1	1	1	1		TB2		
15	R01 998 246	TERMINAL BLOCK	3P(1, 2, 3)	1	1	1	1		TB4		
16	T7W E03 255	FAN MOTOR CAPACITOR	2.5μF 440V	1	1	1	1		C		
17	T7W E24 310	CONTROLLER BOARD		1	1	1	1		I.B		
18	T7W 410 239	FUSE	250V 6A	2	2	2	2		F1.2<I.B>		
19	R01 E02 313	POWER BOARD			1	1	1	1	P.B		
20	R01 479 215	RELAY	LY1F DC12V			2	2		88H		
	R01 673 215	RELAY	LY2F DC12V	1	1				88H		
21	R01 12G 105	RUBBER MOUNT		2	2						
	R01 16G 105	RUBBER MOUNT				2	2				
22	T7W B00 762	FAN MOTOR	PN4N45-K	1	1				MF		
	T7W B01 762	FAN MOTOR	PN4N70-K			1	1		MF		
23	R01 E00 075	WIRELESS REMOTE CONTROLLER HOLDER		1	1	1	1				
24	T7W E07 714	WIRELESS REMOTE CONTROLLER		1	1	1	1		W.R		
25	R01 E01 049	REMOTE CONTROLLER DOOR		1	1	1	1				
26	R01 12G 103	SLEEVE BEARING		1	1	1	1				
27	R01 KV5 102	BEARING MOUNT		1	1	1	1				
28	R01 12G 706	THERMAL FUSE	243°F 10A 250V	1	1				FS1.2		
	T7W 589 706	THERMAL FUSE	243°F 16A 250V			1	1		FS1.2		
29	R01 20J 303	INSULATOR			1	1	1	1			
30	T7W B00 700	THERMAL SWITCH		1	1	1	1		26H		
31	T7W 587 300	HEATER ELEMENT	240V 700W	3	3				H		
	T7W 589 300	HEATER ELEMENT	240V 800W			3	3		H		
32	T7W B02 675	FAN GUARD		2	2						
33	T7W B03 675	FAN GUARD				2	2				

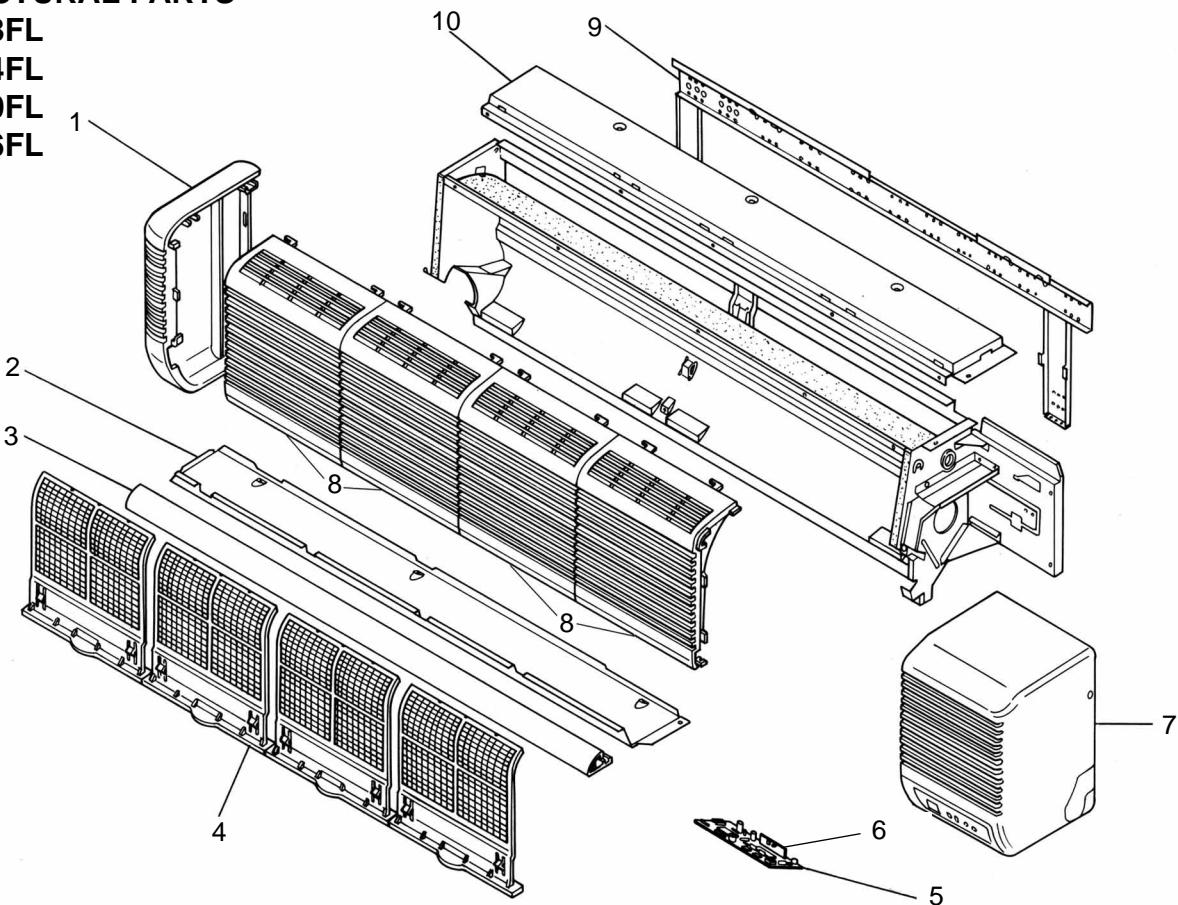
## STRUCTURAL PARTS

**PKH18FL**

**PKH24FL**

**PKH30FL**

**PKH36FL**



Part number that is circled is not shown in the figure.

No.	Parts No.	Parts Name	Specifications	Q'ty / set				Remarks (Drawing No.)	Wiring Diagram Symbol		
				PKH							
				18	24	30	36				
1	R01 12G 662	LEFT SIDE PANEL		1	1	1	1				
2	R01 E01 812	UNDER PLATE		1	1						
	R01 E00 812	UNDER PLATE				1	1				
3	R01 E00 811	NOSE		1	1						
	R01 E01 811	NOSE				1	1				
4	R01 A17 500	FILTER		4	4	5	5				
5	R01 50J 317	W.A. CONT (A)		1	1	1	1				
6	R01 24K 658	RECEIVER		1	1	1	1				
7	T7W E00 661	RIGHT SIDE PANEL		1	1	1	1				
8	R01 12G 691	INTAKE GRILLE		2	2	2	2				
9	R01 12G 808	BACK PLATE		1	1						
	R01 16G 808	BACK PLATE				1	1				
10	R01 E01 641	TOP PLATE		1	1						
	R01 E00 641	TOP PLATE				1	1				
11	R01 16G 692	INTAKE GRILLE				1	1				
12	R01 12G 523	DRAIN SOCKET		1	1	1	1				



Mr.SLIM™



MITSUBISHI ELECTRIC CORPORATION

©Copyright 2001 MITSUBISHI ELECTRIC ENGINEERING CO., LTD.  
Distributed in Nov. 2003 No.OC276 REVISED EDITON-A PDF 9  
Distributed in Dec. 2001 No.OC276

New publication, effective Nov. 2003  
Specifications subject to change without notice.



# **MITSUBISHI ELECTRIC**

## HVAC Advanced Products Division

---

3400 Lawrenceville Suwanee Road • Suwanee, Georgia 30024  
Toll Free: 800-433-4822 • Toll Free Fax: 800-889-9904  
[www.mrslim.com](http://www.mrslim.com)

Specifications are subject to change without notice.